The PHOTOFACT Servicer

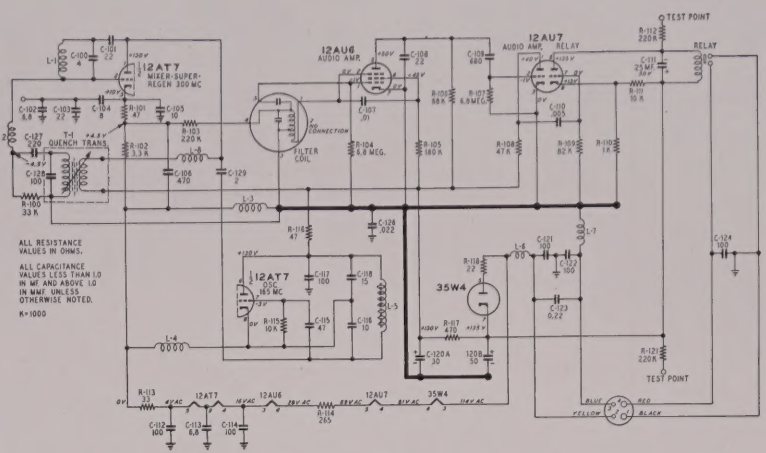
SET 417 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★OCT 15, 1958

CONTENTS PHOTOFACT SET 417

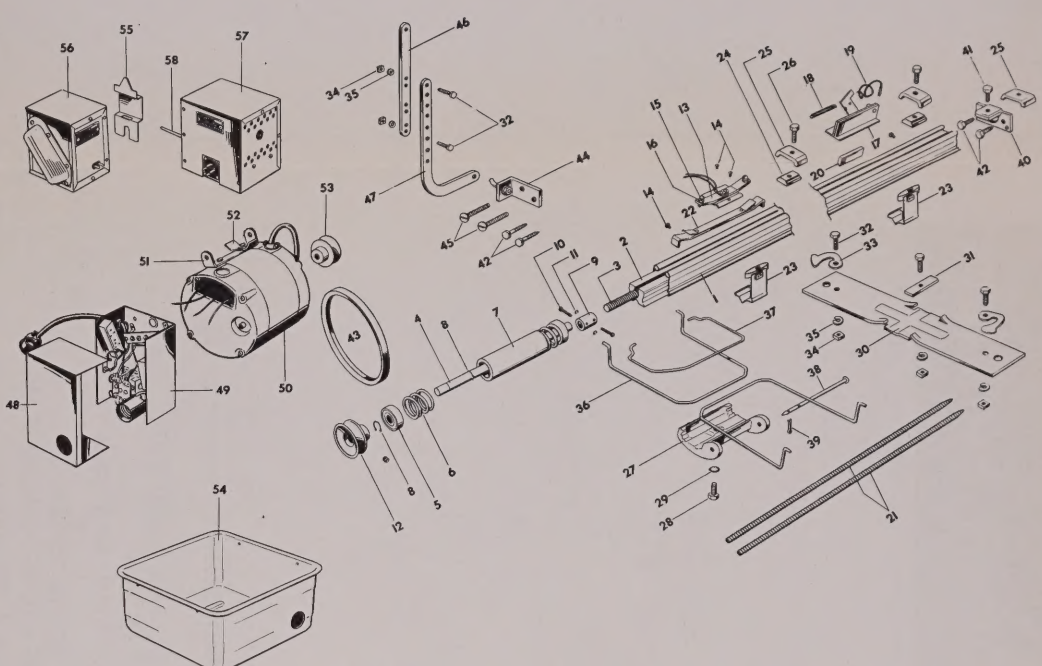
TRADE NAME AND MODEL	SET AND FOLDER NO.
TELEVISION RECEIVERS	
HOFFMAN	
BW1707, CW1707, RW1707, TW1707 (Ch. 338)	417-1
OLYMPIC	
CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KD120, U, KD188, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (Ch. GD, GDU, GH, GHU Run 5 & Higher)	417-2
SILVERTONE	
9118, 9119 (Ch. 528.51220, 222, 223, 230, 231, 232)	417-3
OTHER EQUIPMENT	
FIRESTONE	
4-C-35 (Code 1-7-W100)	417-4
GENERAL ELECTRIC	
P15A, P715A, B, C, P716A, B, P765A, B, P766A, B	417-5
KNIGHT	
KN-410 (92SX408)	417-6
MAGNAVOX	
Chassis AMP-167AA	417-7
PACKARD-BELL	
6R1, 6RC1	417-8
REGENCY	
TCR-2A, TR-5C, TR-7, TR-8A	417-9
SILVERTONE	
Chassis 528.56100 thru 528.56106, 528.56110 thru 528.56117, 528.56120 thru 528.56125, 528.56130 thru 528.56136, 528.56160, 170, 220, 221, 230, 231, 240, 241, 250, 251, 260, 261, 270, 271, 300, 310 Record Changer	417-10
8044, A, 8045, A, 8046, A, 8052, 8053, 8054, 8057, 8058, 9053, 9054 (Ch. 528.53050, 528.53051, 528.53130, 528.53131, 528.53340)	417-11
Chassis 528.58000, 528.58001, 528.59000, 528.59001 Tape Rec.	417-12
STROMBERG-CARLSON	
FR-711C, K, M	417-13
WESTINGHOUSE	
HR-107DP, HR-108DP, HR-109DP, HR-120DP, HR-121DP, HR-122DP (Ch. V-2501-2, V-2502-2, -3)	417-14
ZENITH	
AP9B	417-15

This servicer contains service information for
RCA
ELECTRONIC GARAGE DOOR OPENER
MODEL 5A
This information is presented by the courtesy of

RCA SERVICE COMPANY
a division of RADIO CORPORATION OF AMERICA
CAMDEN 8, NEW JERSEY



ALTERNATE RECEIVER CIRCUIT



Do Not Use Key Numbers when ordering Repair Parts, always use Part Numbers.

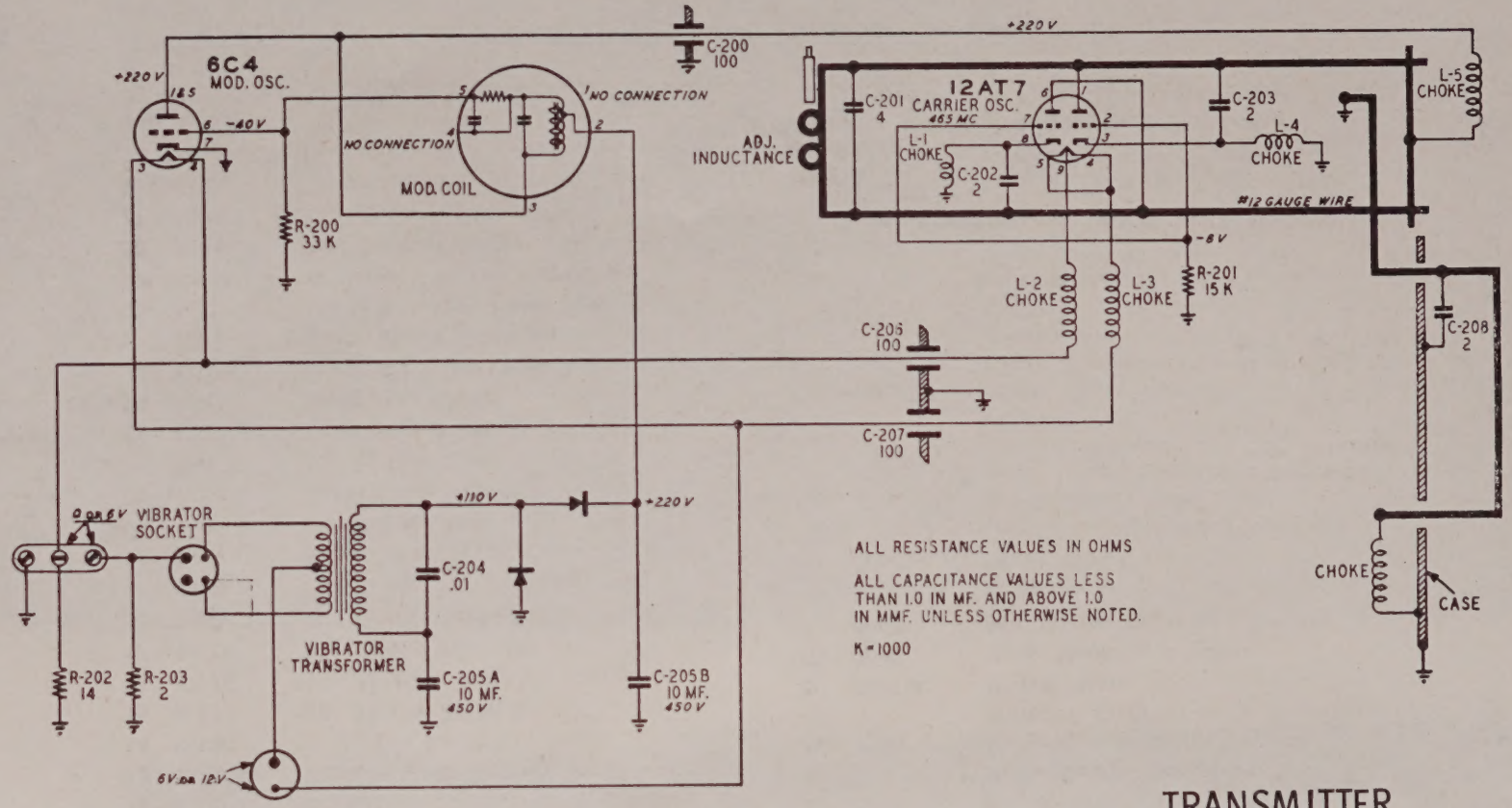
PARTS LIST

Key No.	Part No.	Description
1	1001	11 Ft. Steel Channel
2	1003	10 Ft. Wood Liner
3	1005	10 Ft. Main Screw
4	1101-A	½" Dia. Drive Shaft
5	1102-A	Ball Bearing Assembly
6	1103	Drive Loading Spring
7	1104	Drive Assembly Spacer
8	K-170	*Truarc Ring (Large)
9	1108	Drive Coupling
10	1109	Clevis Pin
11	K-163	*Truarc Ring (Small)
12	1200-A	*2" Pulley
13	1300-A	Pressure Limit Switch Assembly
14	K-100	*6 - 32 X ¼ R.H.M.S.
15	K-174	*10 - 32 X ⅜ R.H.M.S.
16	K-175	*10 - 32 Hex. Nut
17	1400	Nut Carrier Assembly
18	1407	Nut Carrier Latch Spring
19	1408	*Pull Cord
20	1409	Bronze Nut
21	1500	30" Hanger Rod
22	1600-A	Contact Bar Assembly
23	310	Sliding Limit Switch
24	1701	Fixed Stop Assembly Nut
25	1702	Fixed Stop Clamp
26	K-109	*⅜ - 16 X ⅝ Hex. Head Bolt
27	2007	Motor Mount Casting
28	K-110	*⅜ - 16 X ¾ Hex. Head Bolt
29	K-161	*⅜" Internal Tooth Lockwasher
30	3004	Rear Support Bracket
31	3105	Rear Support Clamp Plate
32	K-108	*¼ - 20 X 1 H.H.C.S.
33	3106	Hanger Rod Lock
34	K-157	*¼" Square Nut
35	K-159	*¼" Split Lockwasher
36	3007-A	Wire Cover Hanger
37	3008	Wire Radio Hanger
38	K-155	Nail (Hinge Pin)
39	K-165	*1/16" X 1 Cotter Pin
40	330	Front Support Bracket
41	K-111	*⅜ - 16 X 1 Hex. Head Bolt
42	K-115	*5/16 - 1½ Lag Screw
43	3102	*Vee Belt (Gates #1160)
44	320	Door Arm Bracket Assembly
45	K-116	*⅜ - 16 X 2 F.H.M.S.
46	3006	Hockey Stick Link
47	3005	Hockey Stick
48		Motor Control Box Cover
49	2300	Motor Control Box (Includes #48)
50	2001-A	¼ H.P. Motor
51	2002	Motor Mounting Bracket
52	2003-A	Belt Tension Adjustment Bracket
53	2101	*2" Motor Pulley
54	Special	Plastic Motor Cover
55		Transmitter Mounting Bracket
56	GT2	465 MC Transmitter Note: Channel number is stamped on side of case, example, "T2" indicates channel 2
57	GR-3A	465 MC Radio Receiver Note: Channel number is stamped on side of case, example, "R2" indicates channel 2
58		Antenna Rod for GR-3A

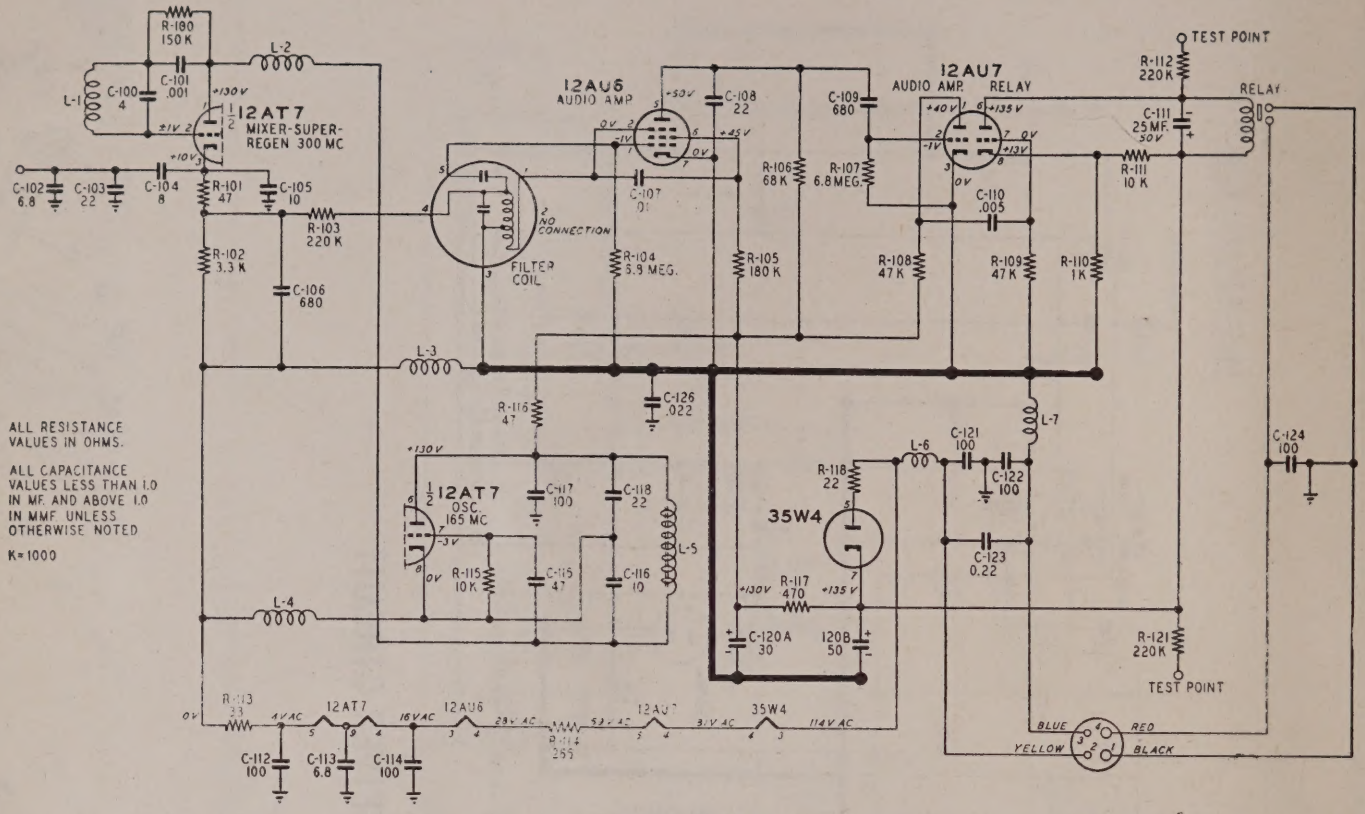
MISCELLANEOUS PARTS NOT SHOWN

Part No.	Description
2A463	Car Push Button Switch
25X2012	Bracket, Switch Mounting
S38A109	Connector Cable Assembly for GT2

*Standard Hardware Item—May be purchased locally.



TRANSMITTER

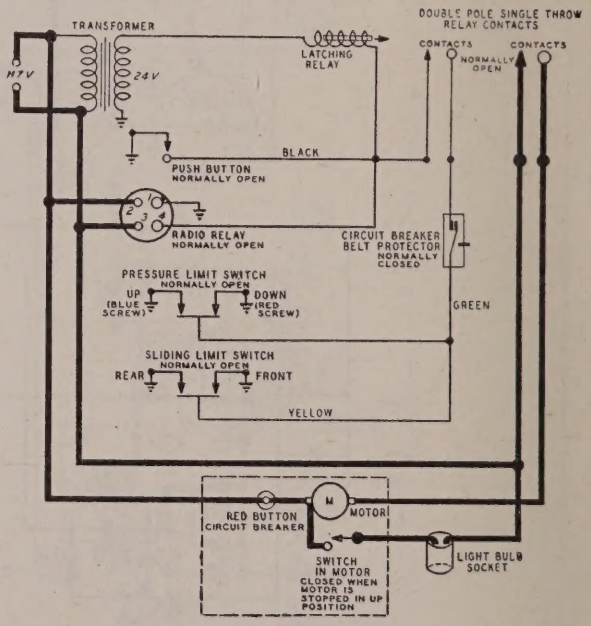


ALL RESISTANCE VALUES IN OHMS.

ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MMF. UNLESS OTHERWISE NOTED

K=1000

RECEIVER



PHOTOFACT* Folder

*TRADE MARK

EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

HOFFMAN MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the top.
2. Remove 5 metal screws holding the rear cover. Remove the rear cover.
3. Remove 2 metal screws holding the front. Pull front out at bottom and lift up. Remove safety glass.
4. Remove 2 metal screws holding the antenna terminal board.
5. Remove the 2 trim strips from the sides.
6. Remove 8 metal screws holding the top of the cabinet. Remove the speaker leads and the top.
7. Remove 2 hex nuts and 1 bolt holding resistor terminal board.
8. Remove 2 metal screws holding the AC interlock.
9. Remove the picture tube socket, yoke plug and HV lead.
10. Remove 2 side chassis bolts and 2 bottom chassis bolts.
11. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Hoffman MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.
TYPE SET	Television Receiver
TUBES	Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RAGING 170 Watts, 1.65 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supply power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 2 metal screws from the bottom edge of the front. Pull front out at the bottom and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
No provision is made to vary the focus on this receiver.

B. Range
Observe the picture and advance the Range Control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSE DEVICE

A Circuit Breaker is used for LV power supply protection, and may be reset by depressing the reset button. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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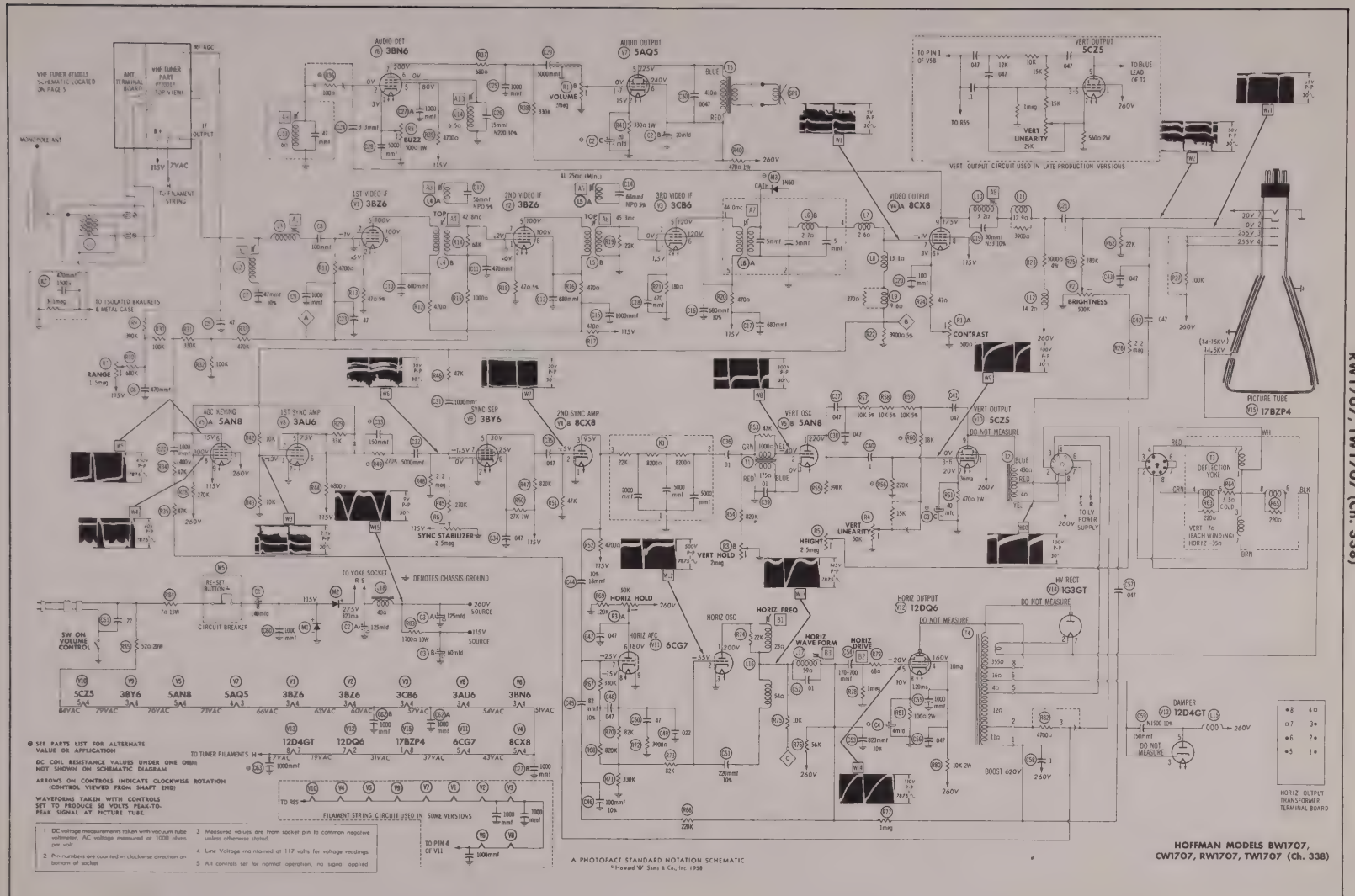
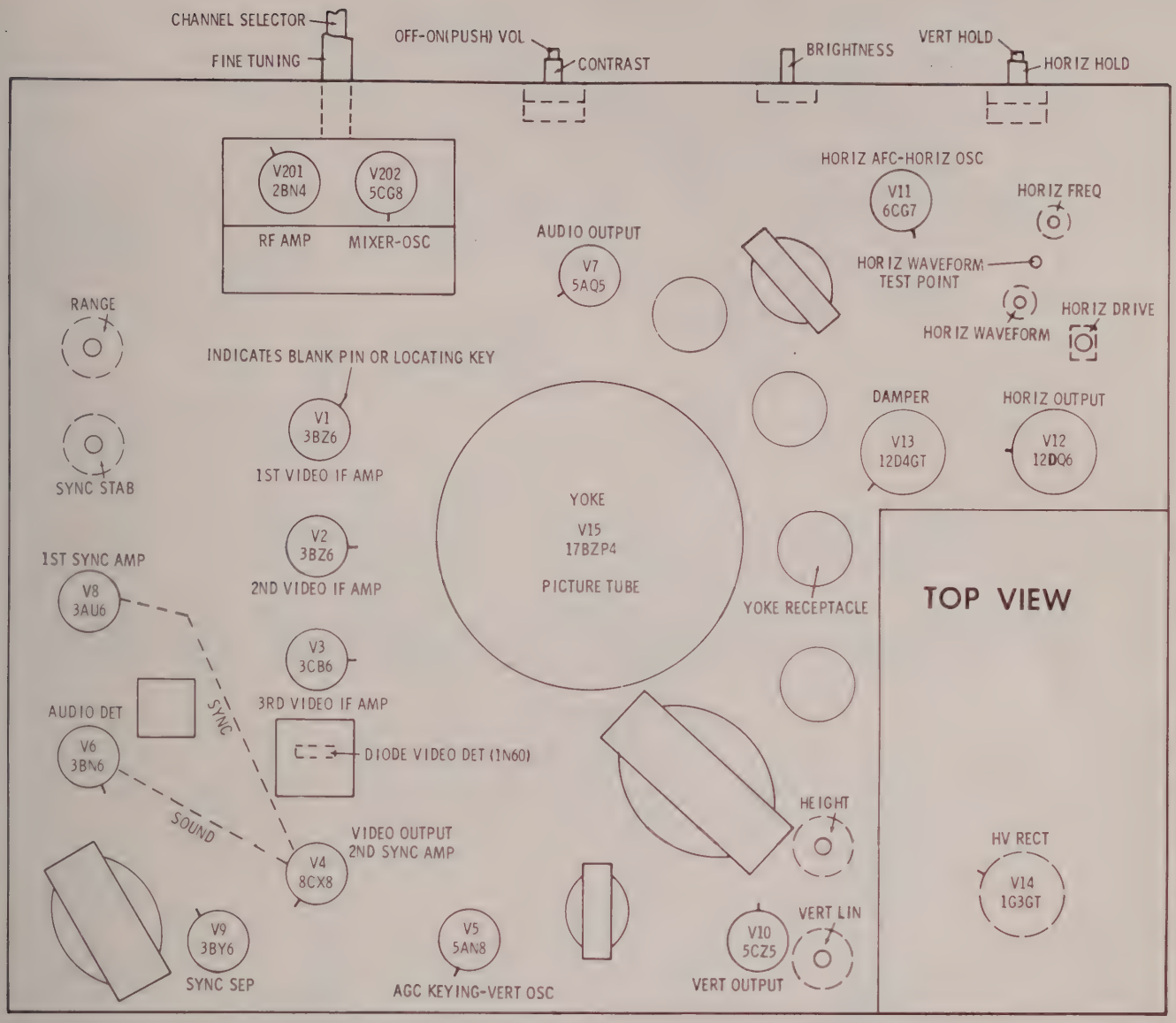
H715R

HOFFMAN MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)

SET 417 FOLDER 1


HOFFMAN MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1958
HOFFMAN MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)
FOLDER 1
PAGE 2
PAGE 15

TUBE PLACEMENT CHART



HOFFMAN MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

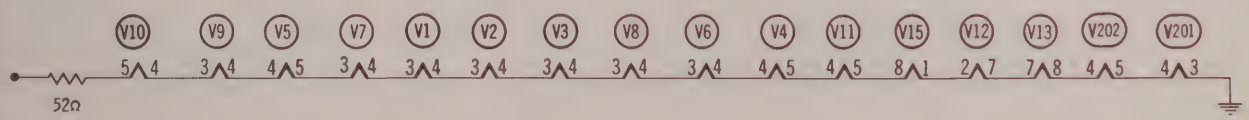
POWER SUPPLY FAILURE
No raster, no sound — Circuit Breaker (M5), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound — V11, V12, V13, V14, V15
No vertical deflection — V5, V10
Poor vert. linearity or foldover — V5, V10
Poor horiz. linearity or foldover — V11, V12, V13
Narrow picture — V11, V12, V13, M1, M2
Vert. off freq. — V5
Horiz. off freq. — V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3, Diode (M3), V4
No pic, no sound, has snow — V201, V202, V1
No pic, has sound, has raster — V4, V15
Has pic, no sound — V6, V7
Overloaded picture — V5

SYNC FAILURE
No vert. sync — V8, V9, V4
No horiz. sync — V8, V9, V4, V11
No vert. or horiz. sync — V8, V9, V4

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (A) Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	43.5MC (15MC Swp)	41.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru detector probe (Fig.1) to pin 5 (plate) of 1st. Video IF Amp. (V1). Low side to chassis.	A1, A2, A3, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A1 and Mixer Plate Coil control shape of curve top and position of 45.75MC marker. Adjust A2 to position 41.25MC marker and A3 to position 47.25MC marker.
2.	"	"	Not used	42.8MC (Unmod)	"	USE VTVM. DC probe to point (B). Common to chassis (Across Video Det. Load)	A4	Adjust for maximum gain.
3.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM deflection.
4.	"	"	"	45.3MC	"	"	A6	Adjust for maximum deflection.
5.	"	"	"	44.0MC	"	"	A7	"

4.5MC TRAP ALIGNMENT

Restore receiver to normal operation and tune in a TV station. Adjust Fine Tuning until a beat pattern is noted in the picture. Adjust A8 until the horizontal scanning lines are smooth and continuous.

SOUND IF ALIGNMENT

Tune in a TV signal and adjust controls for normal operation. Reduce the signal strength by connecting an adjustable attenuator in series with the antenna lead. Attenuate signal until a hiss is heard in the sound similar to super-regeneration. Adjust A9, A10 and the Buzz Control (R8) for maximum undistorted sound with MINIMUM buzz.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 12.

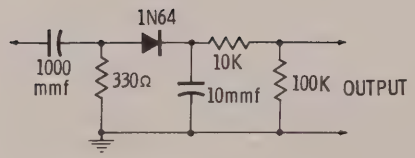


FIG.1

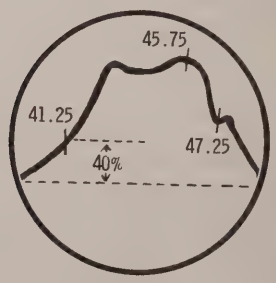
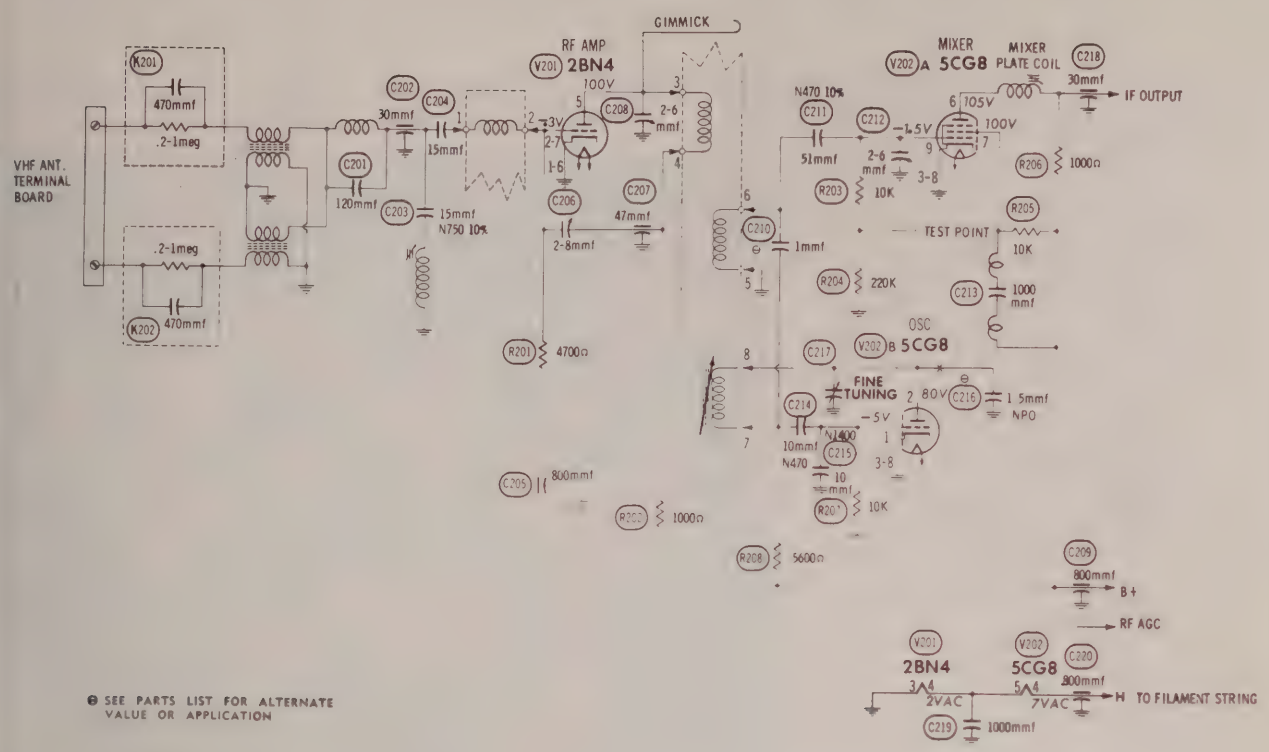


FIG. 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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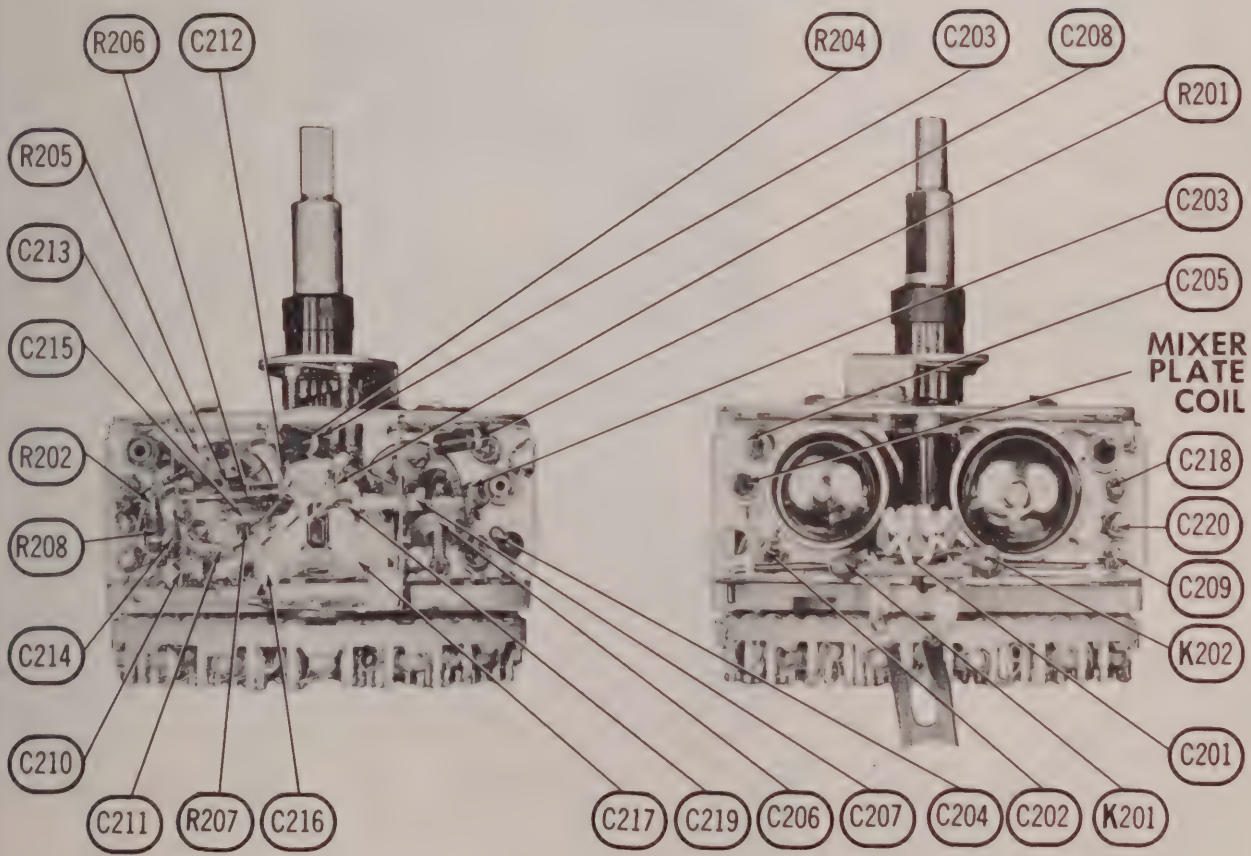
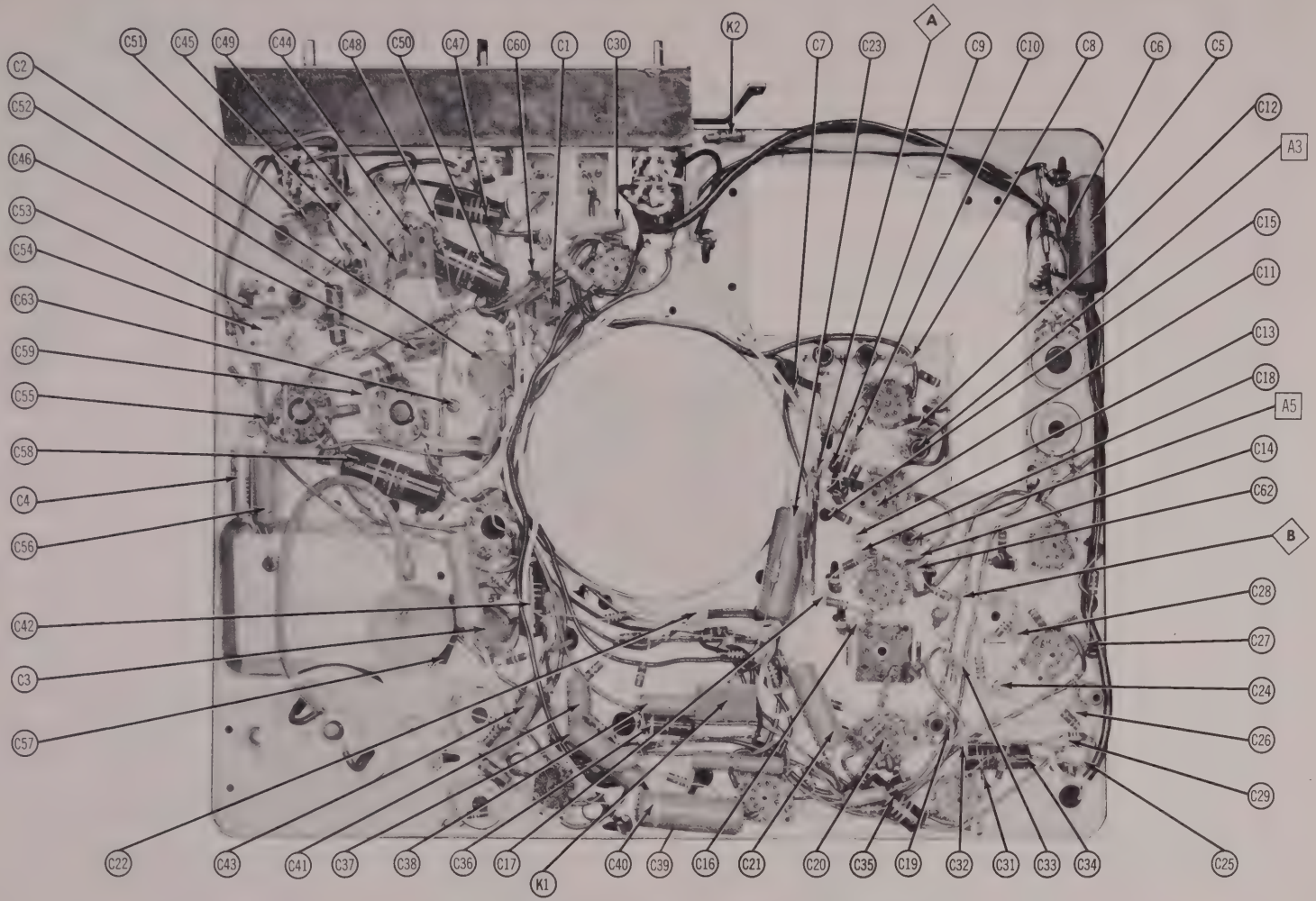
VHF TUNER # 710013

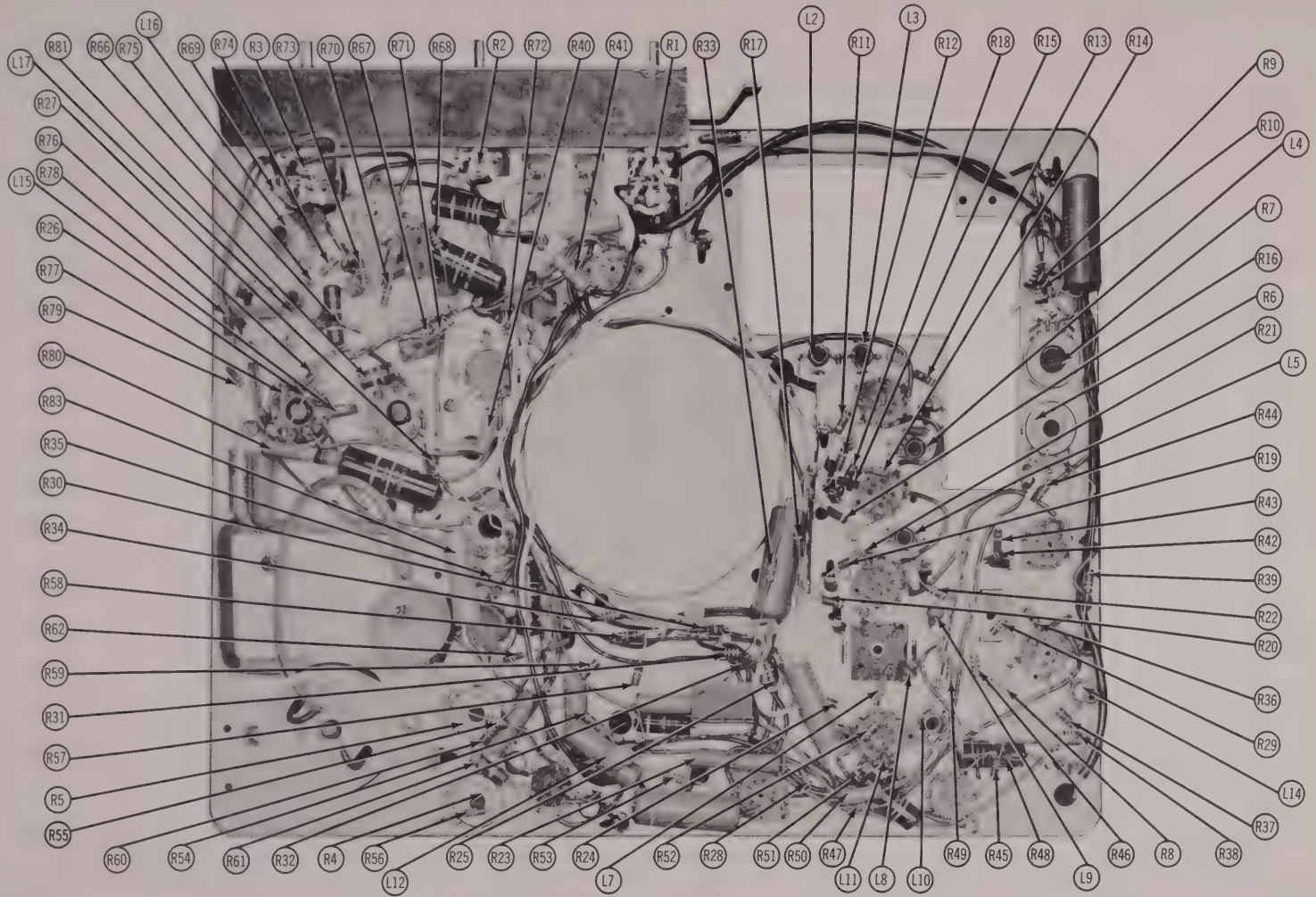


RF TUNER

SET 417 FOLDER 1



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	3BZ6	
V2	2nd Video IF Amp	3BZ6	
V3	3rd Video IF Amp	3CB6	
V4	Video Output, 2nd Sync Amp	6CX8	
V5	Age, Keying, Vert Osc	5AN8	
V6	Audio Det	12AN6	
V7	Audio Output	3AQ5	
V8	1st Sync Amp	7AU6	
V9	Sync Sep	3BY6	
V10	Vert Output	6CZ5	
V11	Horiz AFC-Horiz Osc	6CG7	
V12	Horiz Output	12LQ6	
V13	Damper	12DW4	
V14	HV Rectifier	1G3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	HOFFMAN PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	
V15	17BP4		17BP4	17BP4	① "Silvermatic" ② ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA HOFFMAN PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1	40	150	857303	AFH51-23	XA3261	FP117	TMS-24	T-055	TVL-1428
C2A	20	300	856910	AFH4-20-80	XC0733 2	FP210		Q-222 2	R2376 *
B	20	300				*T1500X80		*MT-0520	
C	20	50							
C3A	20	350	856911	AFH3-99-82	XC0733 7	FP330-27	TMT-26	T-115	TVL-2576 6
B	60	350						*MT-0550	
C	40	50							
C4	40	150		PRS150V4	BBR4-150	TT50X5	TD-4-50	MT-0504	TE-1302 1

1 In some versions C3C and C3C may be interchanged, or C3C may be omitted.
2 Some versions may use a 5mfd & 50VDC in this application (Part # 856006)
* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA HOFFMAN PART No	AEROVOX PART No	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	SPRAGUE PART No	NOTES
C5	.47	200	860153	P38N-47		CUB2P47	GEM-3047	2TM-P47	
C7	470		851123	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C8	47		854051	NPO-SI 47	DS-470	L10Q47		5TCC-Q47	10%
C9	100		854055	SI 100	DS-101	L10T1	UC-S31	5GA-T1	
C10	1000		851126	BPD-001	DD-102	BYA5DI	DCS2I	5HK-D1	
C11	680		851106	BPD-00068	DD-681	L10T68	UC-5368	5GA-T68	
C12	470		851123	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C13	56								
C14	680		851106	BPD-00068	DD-681	L10T68	UC-5368	5GA-T68	NPO 5%
C16	68				DTZ-68				NPO 5%
C18	1000		851126	BPD-001	DD-102	BYA5DI	DCS2I	5HK-D1	
C26	680		851106		MD-681				10%
C27	680		851106	BPD-00068	DD-681	L10T68	UC-5368	5GA-T68	
C28	470		851123	BPD-00047	DD-471	L10T47	UC-5347	5GA-T47	
C29	30		854048						
C30	100		854055	SI 100	DS-101	L10T1	UC-S31	5GA-T1	N33 10%
C31	.1	400	860175	P38N-1	DF-104	CUB4P1	GEM-4041	4TM-P1	
C32	1000	1600	851136	HVD15-1000	DD50-103	HVB5I2A	DC30I2	30GA-D1	
C33	.47	200	860153	P38N5-47	DF-503	CUB2P47	GEM-3047	2TM-P47	
C34	3.3		14081	NPO-SI 3.3	TCS-3R3	CTA6V33C	ET-5333	5TCCB-V33	
C35	1000		851136						10%
C36	18		854045						N220 10%
C37A	1000		851017	BPD-32001	DD2-103	BYD5DDI	DCD52I	5HK-D2I	
B	1000								
C38	5000		851004	BPD-005	DD-502	BYA10D5	DCS25	5HK-D5	
C39	5000		851004	BPD-005	DD-502	BYA10D5	DCS25	5HK-D5	
C40	.0047	400	860300	P38N-0047	DE-472	CUB4D47	GEM-4247	4TM-D47	
C41	1000		851136	BPD-001	DD-102	BYA5DI	DCS2I	5HK-D1	
C42	5000		851004	BPD-005	DD-502	BYA10D5	DCS25	5HK-D5	
C43	150			BPD-00015	DD-151	L10T15	UC-5315	5GA-T15	①
C44	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C45	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C46	.01	400	860263	P38N-01	DS-103	CUB4S1	GEM-411	4TM-S1	
C47	.047	500	860171	P38N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C48	.047	400	860171	P38N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C49	.01	400	860263	P38N-01	DS-103	CUB4S1	GEM-411	4TM-S1	
C50	.1	400	860175	P38N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C51	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C52	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C53	.047	300	860171	P38N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C54	15		847302	1469-000018	DD-180	22R5Q18		MS-418	10%
C55	82		847303	1469-000082	DD-820	22R5Q82		MS-482	10%
C56	100		854055	1469-0001	DD-101	22R5I1	MCB235	MS-31	10%
C57	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C58	.047	200	860171	P38N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C59	.022	200	860117	P38N-022	DD-393	CUB4S22	GEM-4122	4TM-S22	
C60	.47	200	860153	P38N-47		CUB2P47	GEM-3047	2TM-P47	
C61	200		850309	1469-00032	MD-321	22R5732		MS-432	10%
C62	.01	600	860263	P38N-01	DS-103	CUB4S1	GEM-411	4TM-S1	
C63	330		851117	1469-00033		1R5T33		MS-3I	10%
C64	170- 190		872001						
C65	1000		851126	BPD-001	DD-102	BYA5DI	DCS2I	5HK-D1	
C66	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C67	.047	400	860271	P38N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C68	.1	800	860175	P38N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C69	150	5000	851018						N1500 10%
C70	1000		851126	BPD-001	DD-102	BYA5DI	DCS2I	5HK-D1	
C71A	1000		851136	BPD-001	DD-102	BYA5DI	DCS2I	5HK-D1	②
B	1000								

① Some versions may use 330mmf in this application as part of a component combination.
② Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No	RATING OHMS	RATING WATT	HOFFMAN PART No	NOTES
R9	390K		841223	
R10	680K		841226	
R11	4700Ω		814200	
R12	470Ω		814188	
R13	47Ω 5%		841176	
R14	68K		841214	
R15	1000Ω		841192	
R16	470Ω		841188	
R17	470Ω		841188	
R18	47Ω 5%		841176	
R19	22K		841208	
R20	470Ω		841188	
R21	180Ω		841183	
R22	3900Ω 5%		841199	
R23	5000Ω	4	843280	
R24	47Ω		841176	
R25	180K		841219	
R26	2.2meg		841232	
R27	100K		841216	
R28	270K		841185	
R29	33K		841210	
R30	100K		841216	
R31	330K		841222	
R32	100K		841216	
R33	470K		841224	
R34	47K		841212	
R35	47K		841212	
R36	100Ω		841180	Note 1
R37	680Ω		841190	
R38	330Ω		841192	
R39	4700Ω		814200	
R40	470Ω	1	841695	
R41	330Ω	1	841693	
R42	10K		841204	
R43	10K		841204	
R44	6800Ω		814202	
R45	270K		841185	
R46	47K		841212	
R47	820K		841227	
R48	2.2meg		814233	
R49	270K			Note 2
R50	27K	1	814265	
R51	47K		841212	
R52	4700Ω		814200	
R53	47K		841212	
R54	820K		841227	
R55	390K		841223	
R56	270K		841185	Note 3
R57	10K 5%		841204	
R58	10K 5%		841204	
R59	10K 5%		841204	
R60	18K		841207	Note 4
R61	470Ω	1	841695	
R62	22K		841208	
R63	220Ω			
R64	3.3Ω Coils			
R65	220Ω			
R66	220K		814220	
R67	330K		814222	
R68	820K		841227	
R69	120K		841217	
R70	82K		841215	
R71	330K		841222	
R72	3900Ω		841199	
R73	82K		841215	
R74	22K		841208	
R75	10K		841204	
R76	56K		841213	
R77	1meg		841228	
R78	1meg		841228	
R79	68Ω		841178	
R80	10K	2	814204	
R81	100Ω	2	818180	
R82	4700Ω		814200	
R83	1700Ω	10	825436	
R84	7Ω	15	826003	
R85	52Ω	20	827005	

Note 1. Not used in some versions.
Note 2. Some versions may use 150K in this as part of a component combination.
Note 3. Some versions may use 470K in this application.
Note 4. Some versions may use 15K in this application.

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA HOFFMAN PART No	Meissner PART No	Merit PART No	Miller PART No	Rem PART No	NOTES
L1	Ant. Trans.	776006					
L2	39MC Coil	782019		TV-152	4206		
L3	Int. Video IF	782020	17-4534	TV-131		VF-4	
L4A	47.25MC Trap	782022	17-4536		6222		
B	2nd. Video IF						
L5A	41.25MC Trap	782023	17-4535		6221		
B	3rd. Video IF						
L6A	4th. Video IF	782023	17-4514 *				Includes M3, and Cape.
B	Resonant Choke						
L7	Resonant Choke	750012					
L8	Shunt Peaking Coil	771033	19-3160	TV-196	6120	VP-5	160 Microhenries
L9	Shunt Peaking Coil	771034	19-3100	TV-194	6112	VP-3	100 Microhenries
L10	4.5MC Trap	782021	20-1004	TV-181	1469 †	SF-3	
L11	Series Peaking Coil	771035	19-3180	TV-198	6130		180 Microhenries
L12	Shunt Peaking Coil	771033	19-4201	TV-194	6180	VP-5	190 Microhenries
L13	Sound IF	782018		TV-154			
L14	Quadrature Coil	774007	20-1005	TV-121	1480		
L15	RF Choke	750013		SW-631	4609		5 Microhenries

* Enlarge mounting holes. † Diecast tap.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No	Meissner PART No	Merit PART No	Miller PART No	Rem PART No	Thordarson PART No	NOTES
L16	77Ω *		768014		TV-165	6213		RS-7	Horiz. Freq. * Tapped @ 54Ω Horiz Waveform
L17	59Ω		768015						

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE @ CURRENT 1000 Cy.	HOFFMAN PART No.	REPLACEMENT DATA Halldorson PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L18	.320A	40Ω	1 Hy.	734007					26C44 1	

1 Drill new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA HOFFMAN PART No	Halldorson PART No	Merit PART No	Rem PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T1	Vert. Osc.	730001	B6703	A-3003	V405	A-8125	28A03	A-97X	
T2	Vert. Output	728008					29S41	A-113X 3	
T3 A	Yoke-Horiz (19MH) (100°)-Vert (13MH)	740008			Y-110 1/2	DY-27A 1	Y-52 1	Y-80 & NW23	
B	Rear Cover & Centering Device	964003							
	Yoke Clamp								
T4	Horiz. Output	782007			* GE3856				

1 Use original rear cover and centering device, horizontal damping network.
2 Connect yoke terminal #2 to yoke plug pin #4, yoke terminal #1 and #3 to yoke plug pin #2, yoke terminal #1 to yoke plug pin #2
3 Connect as autoformer

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI	IMPEDANCE SEC	REPLACEMENT DATA HOFFMAN PART No.	Halldorson PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6100Ω	3-4Ω	734019		Z1110	A-3036	AU-602 1	A-3877 1	24S51 1	8-6X 1 Drill new mounting hole.

SPEAKER

ITEM No	TYPE SIZE	TYPE FIELD	TYPE V C IMP	REPLACEMENT DATA HOFFMAN PART No	QUAM PART No	NOTES
SP1	4	PM	3-4Ω	712010	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	HOFFMAN PART No	REPLACEMENT DATA
K1	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 82000, 82000, 22k	888001	Aerovox PA-110 Centralab PC-104 Cornell-Dubilier 1H57M1 Sprague Y-1/Y-3 Centralab RC-4T1 Sprague AC-1
K2	Chassis Isolation	470mmf 1500V, .3-1meg	888006	

RECTIFIERS

ITEM No	RATING CURRENT (Measured)	REPLACEMENT DATA HOFFMAN PART No	FEDERAL PART No	GENERAL ELECTRIC PART No	INTERNATIONAL PART No	SARKES TARZIAN PART No	NOTES
M1	.320A	746001 1		1N1007 2	SD-94 1	40K 1	1 Silicon Type.
M2	.320A	746001 1		1N1007 2	SD-94 1	40K 1	2 Germanium Type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA HOFFMAN PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M3	1N60 *	742002	1N60	1N295	Video Detector (Pigtail) * Some versions may use a CK708A in this application

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M4	Tuner	710013	VHF
	Tuner	713010	UHF
M5	Circuit Breaker	990001	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	432002	
Mask	469004	
Knob	480065	Channel Selector
Knob	492002	Fine Tuning
Knob	492003	UHF Dial
Knob	480086	UHF
Knob	509010	On-Off-Volume, Horiz. Hold
Knob	509011	Contrast, Vert. Hold
Knob	509012	Brightness
Handle	389011	
Cabinet	361001	Top
Cabinet	361002	Bottom, Model CW1707
Cabinet	361003	Bottom, Model RW1707
Cabinet	361004	Bottom, Model RW1707
Cabinet	361005	Bottom, Model TW1707

WIRING DATA

High Voltage Lead	Use BELDEN No. 8859
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 7 Conductor 8488 (Round) - 8 Conductor

HOFFMAN MODELS BW1707, CW1707, RW1707, TW1707 (Ch. 338)

FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120			BPD-00012	DD-121	L10T12	UC-5312	5GA-T12	
C202	30								
C203	15			N750-DI 15	DTN-15	C10Q15U		5TCU-Q15	N750 10%
C204	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C205	800								
C206	2-8								
C207	47								
C208	2-6								
C209	800								
C210	1.0			NPO-SI 1.0	TCZ-1			5TCCB-V1	1
C211	51								N470 10%
C212	2-6								
C213	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C214	10								N470
C215	10								N1400
C216	1.5			NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	NPO 2
C217									
C218	30								
C219	1000			BI-D-001	DD-102	BYA6D1	DC521	5HK-D1	
C220	800								

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	10K			
R204	220K			

ITEM No.	RATING		HOFFMAN PART No.	NOTES
	OHMS	WATT		
R205	10K			
R206	1000Ω			
R207	10K			
R208	5600Ω			

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	HOFFMAN PART No	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, 2-1meg		Centralab Sprague	RC-471 R-9197
K202	Antenna Isolation	470mmf, 2-1meg		Centralab Sprague	RC-471 R-9197

TUNER ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Touch-up adjustment of the VHF Oscillator is possible by removing the rear cover, and supplying power to the receiver. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, thru a hole in the right side of the tuner rear cover as viewed from the rear Adjust for best picture and sound.

RF AND MIXER ALIGNMENT

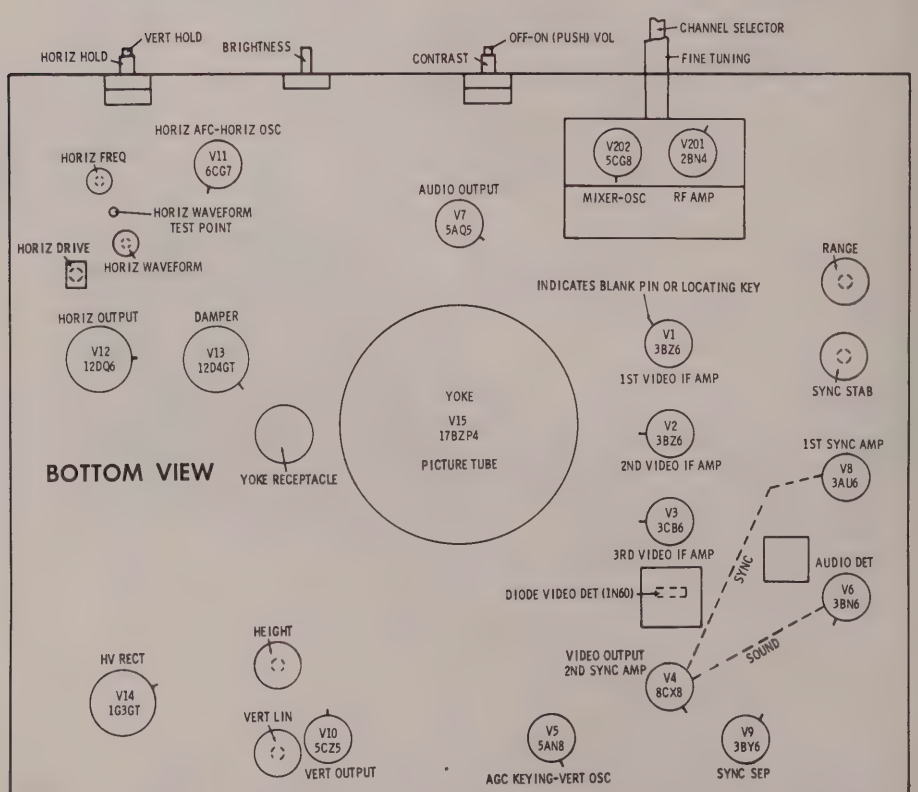
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

CHASSIS TOP VIEW

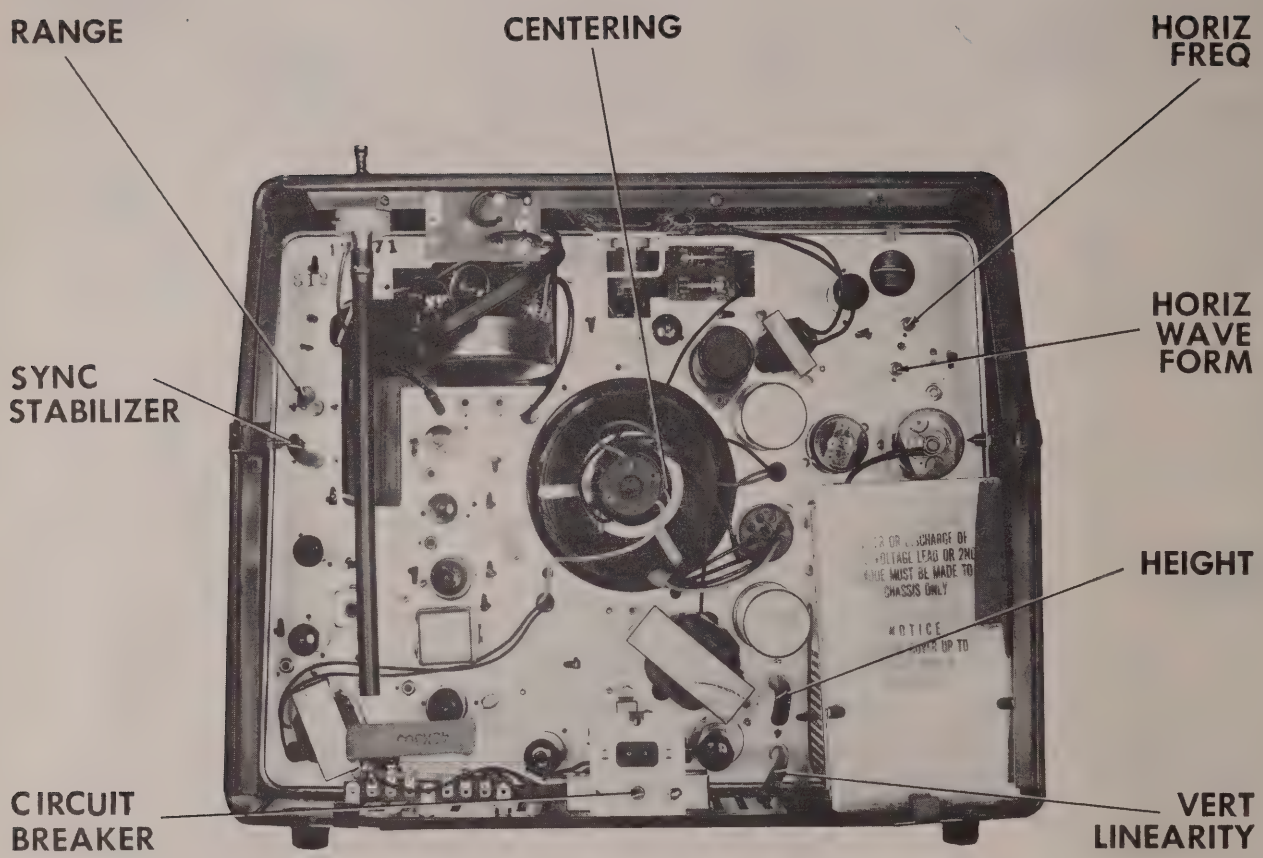
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	570K	47Ω	17Ω	16Ω	†2600Ω	†2600Ω	0Ω		
V2	3BZ6	570K	47Ω	16Ω	15Ω	†2600Ω	†2600Ω	0Ω		
V3	3CB6	.1Ω	180Ω	15Ω	14Ω	†2100Ω	†2100Ω	0Ω		
V4	8CX8	0Ω	47K	†49K	12Ω	10Ω	• 320Ω	1200Ω	†1700Ω	†5000Ω
V5	5AN8	• ‡1.4meg	1.2meg	175Ω	18.5Ω	20Ω	300K	†0Ω	†35K	†1700Ω
V6	3BN6	• 330Ω	106Ω	13Ω	12Ω	†6400Ω	6.5Ω	†330K		
V7	5AQ5	0Ω	330Ω	17Ω	18.5Ω	†880Ω	†470Ω	0Ω		
V8	3AU6	5000Ω	†8500Ω	14Ω	13Ω	†8500Ω	†8500Ω	0Ω		
V9	3BY6	• 750K	0Ω	21.5Ω	20Ω	†820K	†29K	2.2meg		
V10	5CZ5	†0Ω	NC	270K	21.5Ω	22.5Ω	270K	470Ω	NC	†430Ω
V11	6CG7	†56K	410K	0Ω	10Ω	8.5Ω	• †30K	1.5meg	410K	0Ω
V12	12DQ6	TP	7Ω	TP	†10K	1meg	TP	4.5Ω	100Ω	TOP CAP ‡16Ω
V13	12D4GT	TP	NC	¶800K	NC	†.1Ω	NC	4.5Ω	2Ω	
V14	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡371Ω
V15	17BZP4	7Ω	22K	†100K	†100K	NC	NC	• 230K	8.5Ω	
V201	2BN4	0Ω	700K	0Ω	.5Ω	†2700Ω	0Ω	700K		
V202	5CG8	10K	†7300Ω	0Ω	2Ω	.5Ω	†2700Ω	†11K	0Ω	230K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 260V SOURCE. NC NO CONNECTION.
‡ MEASURED FROM PIN 3 OF V13. TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the Horizontal Hold fully clockwise. Tune in a station and adjust the Horizontal Frequency (B1) until the picture is just about to tear out of sync (jitter at the top of the picture).

Turn the Contrast fully counterclockwise and the Brightness clockwise so that the picture appears washed out. Turn the Horizontal Drive (B2) clockwise until white vertical bars (drive lines) appears in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of a scope to point ◈ . Low side to chassis. Adjust the Horizontal Waveform (B3) until the round and sharp peaks are equal in amplitude. (See Fig. 3). Keep the picture in sync during this adjustment.

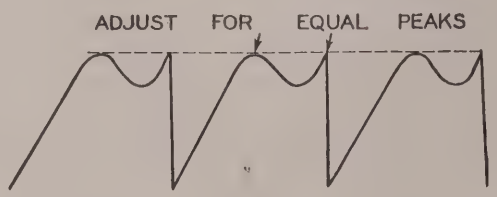


FIG. 3

PHOTOFACT* Folder
*TRADE MARK

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 push-on type knobs from the front.
2. Remove 2 wood screws holding the rear cover. Remove rear cover.
3. Remove the picture tube socket, high voltage lead, yoke plug and 2 speaker plugs.
4. Remove tape holding ground strap from chassis to picture tube.
5. Remove 1 chassis bolt at top of chassis.
6. Remove 3 bottom chassis bolts.
7. Remove chassis.

MODEL TD102M (CH. GD)

TRADE NAME	Olympic	MODELS	CHASSIS
		CD108, CD109, CD110, KD118, KD119, KD120 KD188, PKD118, PKD119, TD102	GD, Run 5 & Higher
		CD108U, CD109U, CD110U, KD118U, KD119U, KD120U, KD188U, PKD118U, PKD119U, TD102U	GDU, Run 5 & Higher
		CH402, KH406, KH407	GH, Run 5 & Higher
		CH402U, KH406U, KH407U	GHU, Run 5 & Higher
MANUFACTURER	Olympic Radio & Television Inc., 34-01 38th. Avenue, Long Island City 1, N. Y.		
TYPE SET	Television Receiver		
TUBES	Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 180 Watts, 1.83 Amp. ③ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 11 o'clock, and should be adjusted first. The LOW band adjustment is located at 8 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws holding the metal trim strip at the top edge of the safety glass. Tilt out at the top and lift up to remove.

FOCUS

The focus may be varied by the position of a strap on the base of the Picture Tube. The strap can be connected between pins 6 and 10, or 6 and 1.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. The Sound Clarifier is used to touch-up sound without removing cabinet back. (For location, see tube placement chart.)

FUSE

One fuse is used for horizontal sweep circuit protection, and two fuse wires for filament protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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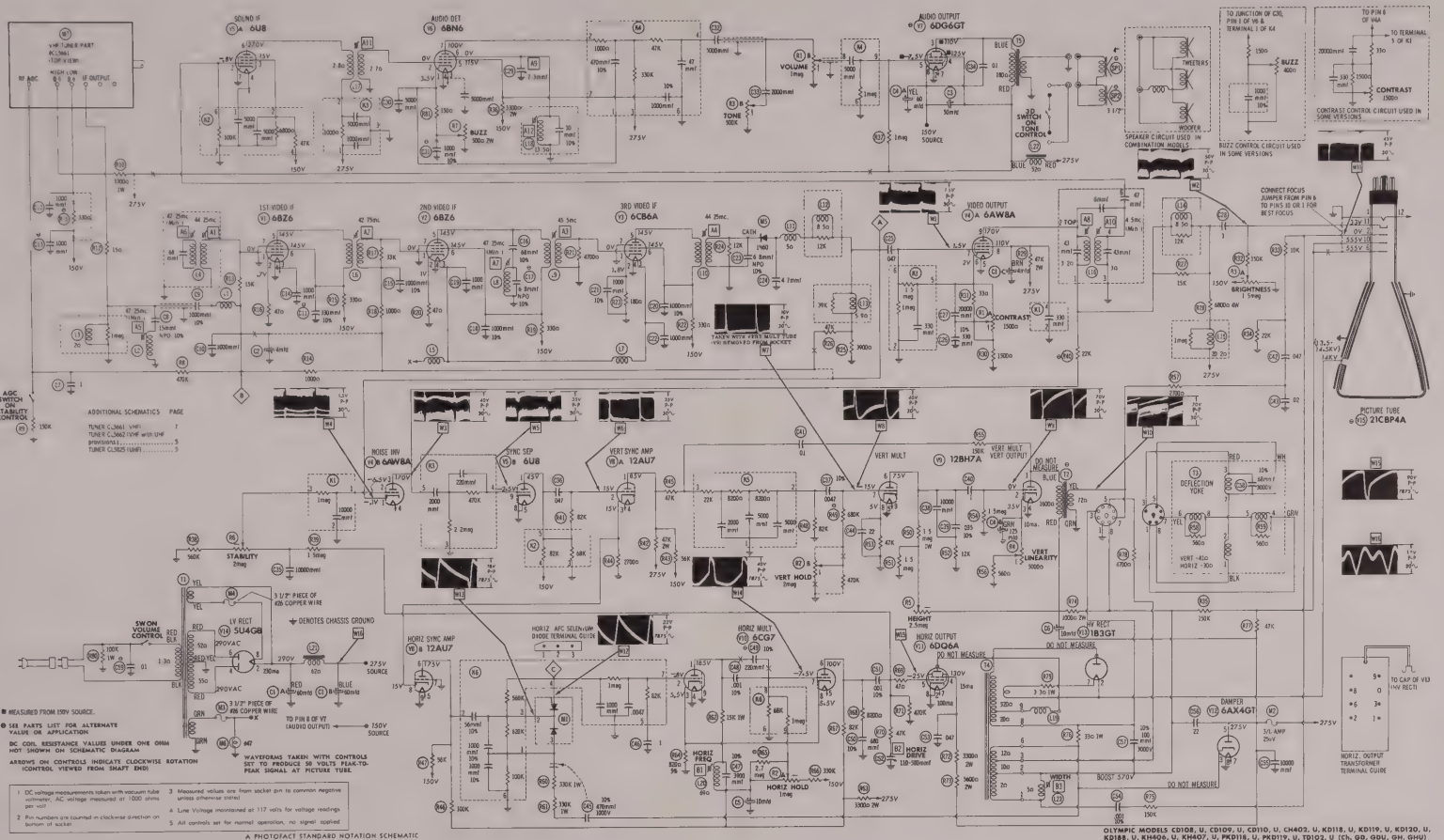
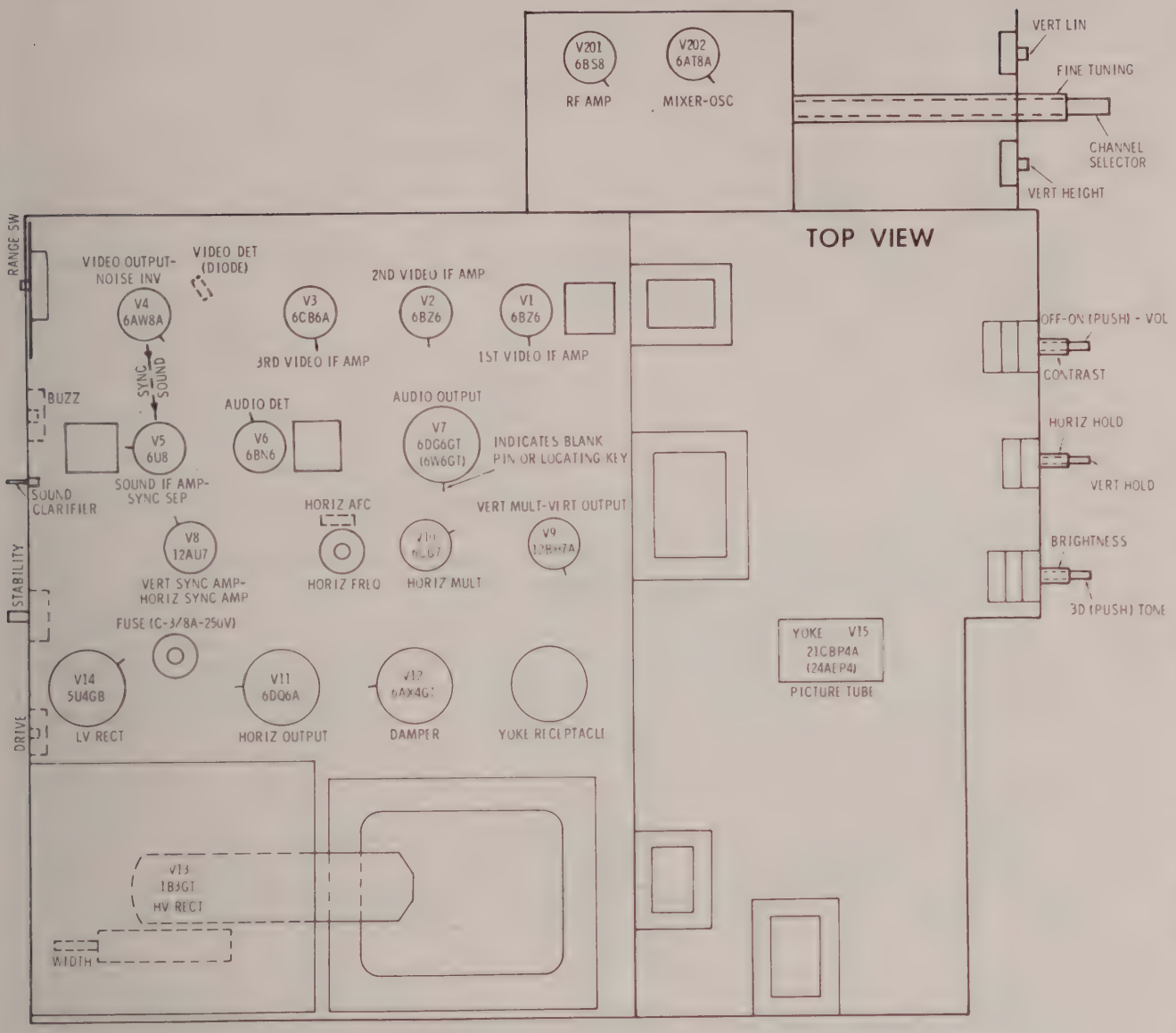
OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KD120, U, KD188, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (Ch. GD, GDU, GH, GHU)

SET 417 FOLDER 2


SOUND IF V5 A 6U8
AUDIO DET V6 6BN6
AUDIO OUTPUT V7 6DG6GT
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6A
VIDEO OUTPUT V4 6AW8A
NOISE INV V9 6AW8A
SYNC SEP V8 6U8
VERT SYNC AMP V10 A 12AU7
VERT MULT V5 12BH7A
HORIZ SYNC AMP V10 B 12AU7
HORIZ AFC SELEN-IUM DIODE TERMINAL GUIDE
HORIZ MULT V10 6CG7
HORIZ OUTPUT V11 6DQ6A
LV RECT V14 5U4GB
HV RECT V12 1B3GT
DAMPER V13 6AX4GT
PICTURE TUBE V15 21CBP4A
AGC SWITCH ON STABILITY CONTROL
ON VOLUME CONTROL
STABILITY
VOLUME
TONE
TV SWITCH TONE CONTROL
TWEETERS
WOOFER
SPEAKER CIRCUIT USED IN COMBINATION MODELS
BUZZ CONTROL CIRCUIT USED IN SOME VERSIONS
CONTRAST CONTROL CIRCUIT USED IN SOME VERSIONS
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 10 OR 1 FOR BEST FOCUS
BRIGHTNESS
CONTRAST
HEIGHT
WIDTH
BOOST
VERT LINEARITY
HORIZ FREQ
HORIZ DRIVE
HORIZ HOLD
VERT HOLD
DEFLECTION YOKE
VERT -40o HORIZ -30o
DO NOT MEASURE
ADDITIONAL SCHEMATICS PAGE
TUNER CJ-3661 VHF 7
TUNER CJ-3662 VHF WITH UHF provisions 5
TUNER CJ-3625 (UHF) 5
MEASURED FROM 150V SOURCE.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
RC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
DENOTES CHASSIS GROUND
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1958
OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KD120, U, KD188, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (Ch. GD, GDU, GH, GHU)

TUBE PLACEMENT CHART



OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KD120, U, KD188, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (Ch. GD, GDU, GH, GHU)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (M3, M4), V14

SWEEP FAILURE
No raster, has sound Fuse (M2), Rectifier (M1), V10, V11, V12, V13, V15
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V9
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M5), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8, M1
No vert. or horiz. sync V5, V8

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools :

A1, A2, A3, A4, A5, A6, A7, A8, A9, & Mixer Plate Coil	General Cement #8282, 8606, 8606L, 9295 Walsco #2543, 2544, 2545
A10, A11, A12	General Cement #8721, 8722 Walsco #2519
B4	General Cement #5003, 8276, 8721, 8722 Walsco #2516, 2519

VIDEO IF ALIGNMENT

Use lowest scale on VTVM.
Preset A1 and A6 for maximum core separation.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	44.5MC (Unmod)	Any non-interfering channel	DC probe thru 100K to point (A). Common to chassis. (Across Video Det. load)	Mixer Plate Coil	Use only enough generator output to provide a usable indication on VTVM.
2.	"	"	44.25MC	"	"	A1	"
3.	"	"	42.75MC	"	"	A2	"
4.	"	"	45.5MC	"	"	A3	
5.	"	"	44.25MC	"	"	A4	
6.	"	"	47.25MC	"	"	A5, A6, A7	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 4 volt bias supply to point (B). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to ungrounded tube shield floating over Mixer Osc. Tube (V202) Low side to chassis.	44.5MC (10MC Swp)	41.25MC 42.5MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 100K to point (A). Low side to chassis. (Across Video Det. load).		Check for response curve similar to Fig. 1. If necessary, SLIGHTLY retouch A1 thru A7 and Mixer Plate Coil to obtain desired response.

4.5MC TRAP ALIGNMENT

Set Contrast fully clockwise.
Remove the 6CB6 (V3) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru diode probe (Fig. 2) to pin 11 (cathode) of picture tube. Common to chassis.	A8	Use maximum generator output. Adjust A8 for MINIMUM deflection. Replace V3 in its socket.

SOUND IF ALIGNMENT

Tune in a TV station and adjust controls for normal operation. Set the "Sound Clarifier" (A9) to the center of its range. Connect an output meter across the speaker voice coils. Adjust A10 and A11 for maximum deflection. Set the Buzz Control (R7) to the center of its range. Adjust A12 for maximum deflection. Adjust Buzz Control for MINIMUM buzz in the sound. Retouch A12 for maximum undistorted sound.

TUNER ALIGNMENT LOCATED ON PAGES 6 & 17

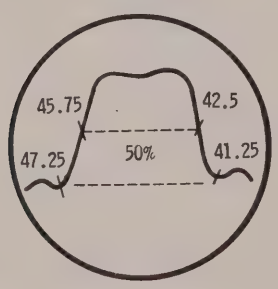


FIG. 1

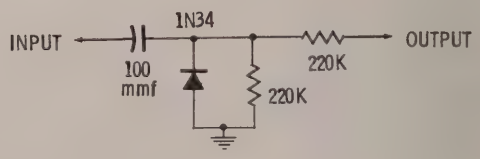
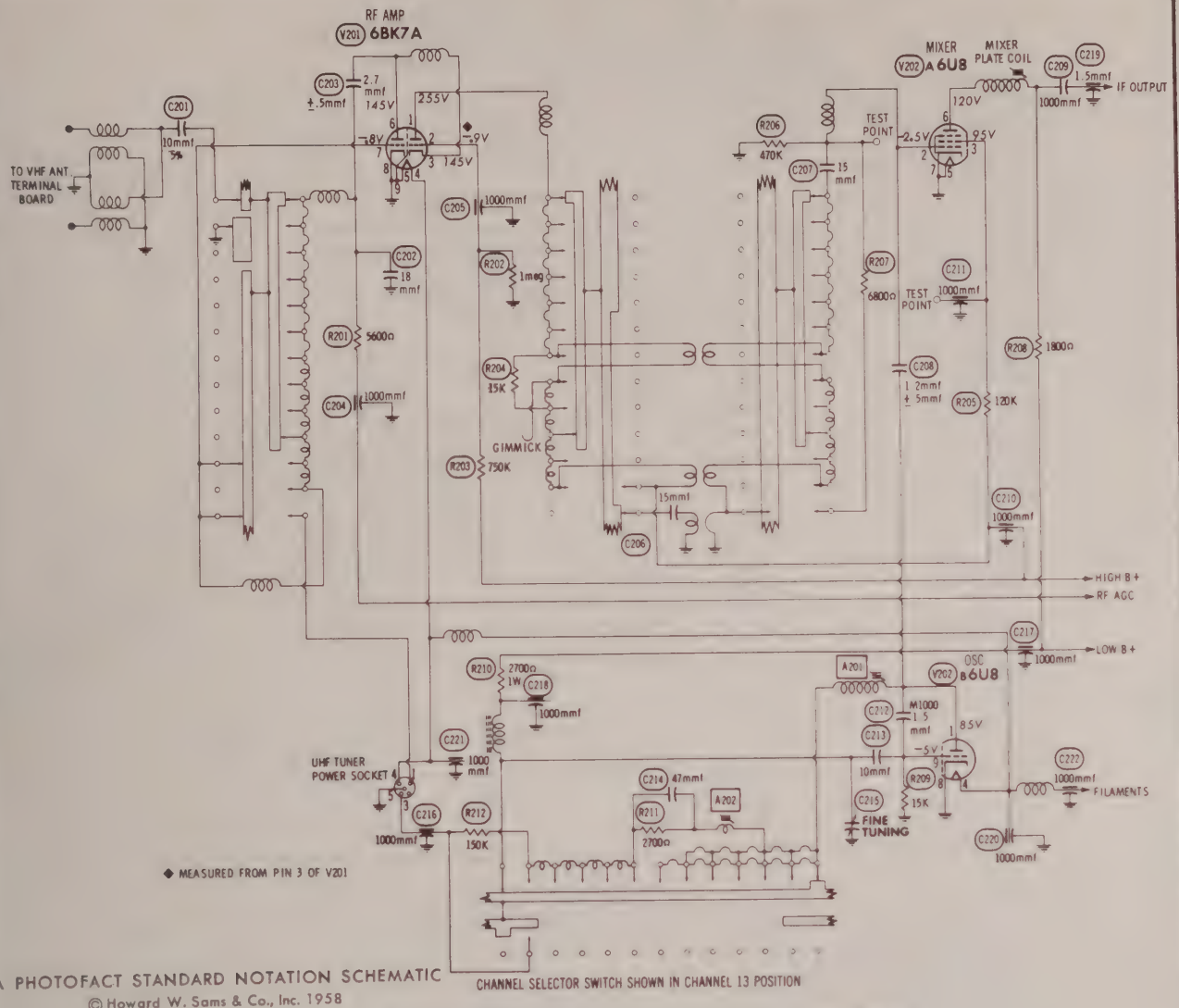


FIG. 2



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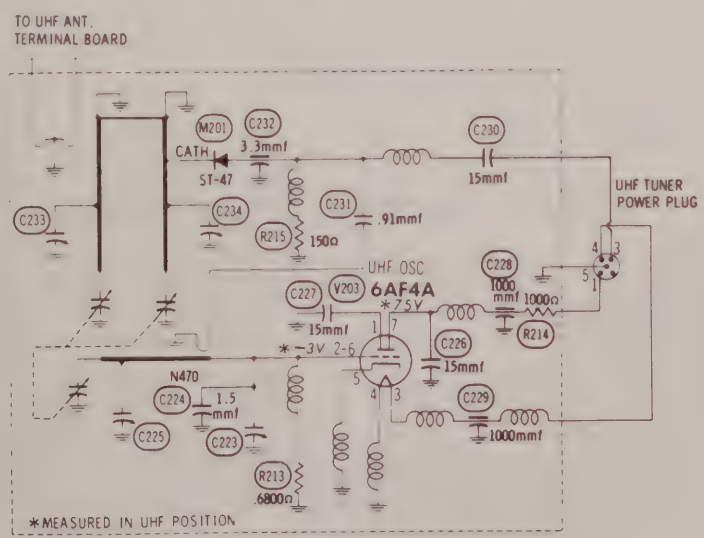
VHF W/UHF PROVISIONS TUNER #CL5662



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UHF TUNER #CL5825

OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KD120, U, KD188, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (Ch., GD, GDU, GH, GHU)

TUNER CL5662 – CL5825
PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BK7B	
V202	Mixer-Osc.	6U8	

ITEM No.	USE	TYPE	NOTES
V203	UHF Osc.	6AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	10				TCZ-10				5%
C202	18			DI 18	DD-180	L10Q18	UC-5418	5GA-Q18	
C203	2.7								±.5mmf
C204	1000			EF-001	MFT-1000			503C-D1	
C205	1000			EF-001	MFT-1000			503C-D1	
C206	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C207	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C208	1.2								±.5mmf
C209	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C210	1000			EF-001	MFT-1000			503C-D1	
C211	1000			EF-001	MFT-1000			503C-D1	
C212	1.5								N1000
C213	10			BPD-00001	DD-100	L10Q1	UC-541	5GA-Q1	
C214	47			BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C215									
C216	1000			EF-001	MFT-1000			503C-D1	
C217	1000			EF-001	MFT-1000			503C-D1	
C218	1000			EF-001	MFT-1000			503C-D1	
C219	1.5								
C220	1000			EF-001	MFT-1000			503C-D1	
C221	1000			EF-001	MFT-1000			503C-D1	
C222	1000			EF-001	MFT-1000			503C-D1	
C223									
C224	1.5								N470
C225									
C226	15								
C227	15								
C228	1000			EF-001	MFT-1000			503C-D1	
C229	1000			EF-001	MFT-1000			503C-D1	
C230	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C231	.91								
C232	3.3								
C233									
C234									

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	OLYMPIC PART No.	NOTES
R201	5600Ω			
R202	1meg			
R203	750K			
R204	15K			
R205	120K			
R206	470K			
R207	6800Ω			
R208	1800Ω			

ITEM No.	RATING OHMS	RATING WATT	OLYMPIC PART No.	NOTES
R209	15K			
R210	2700Ω	1		
R211	2700Ω			
R212	150K			
R213	6800Ω			
R214	1000Ω			
R215	150Ω			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M201	ST-47		1N82A	1N82A	UHF Mixer (Clip-in)

TUNER ALIGNMENT INSTRUCTIONS

TUNER #CL5662

VHF OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its range (flat of fine tuning shaft is at right angles to top of tuner). Set the Channel Selector to the highest high band channel (13-7) operating in the area. Adjust the high band oscillator adjustment slug (A201) for best picture and sound. Switch Channel Selector to the highest low band channel (6-2) operating in the area and adjust the low band oscillator adjustment(A202) for best picture and sound. Recheck high band adjustment.

VHF RF AND MIXER ALIGNMENT

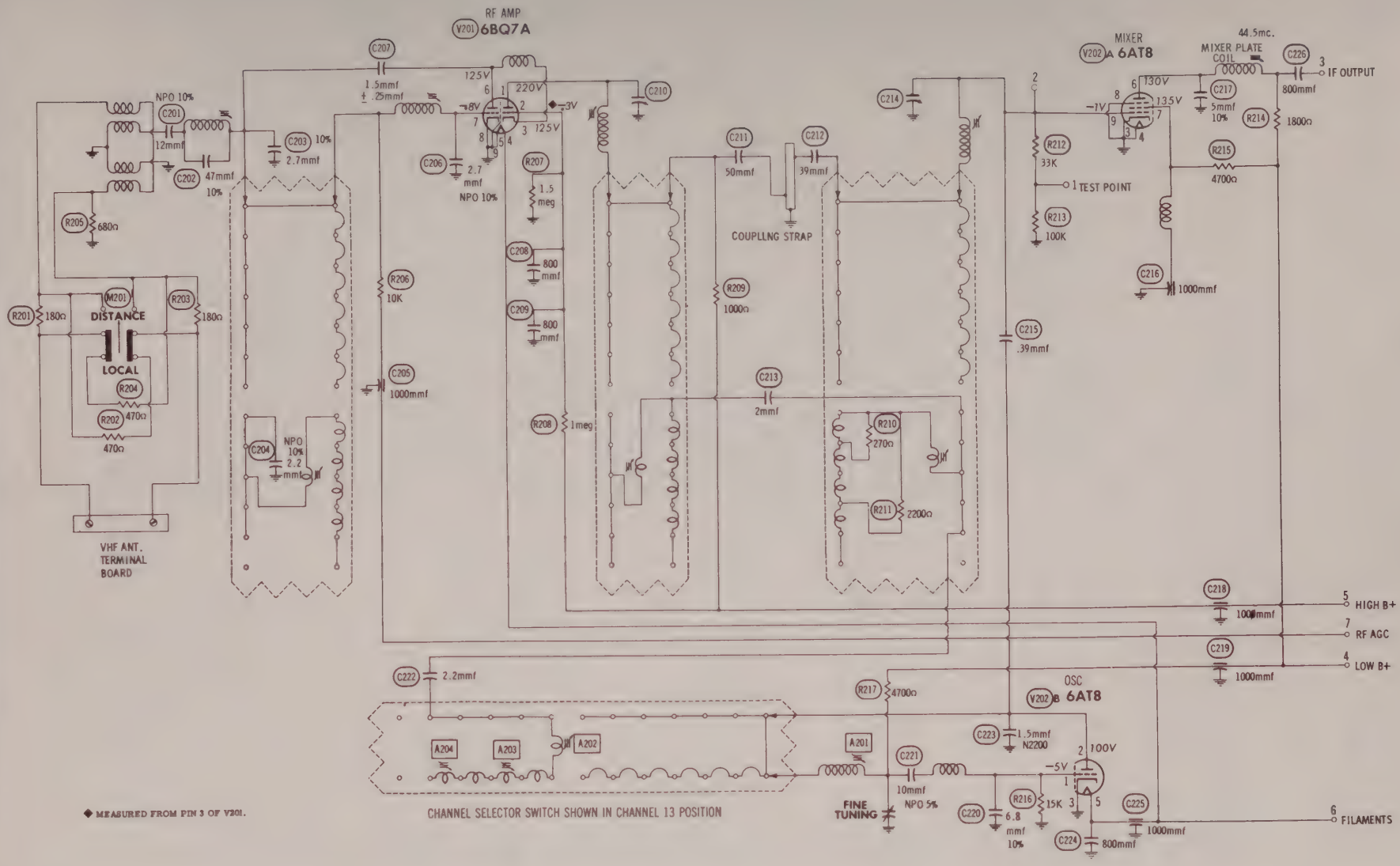
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER DIAL ALIGNMENT

Turn the VHF tuner to UHF position and turn the fine tuning (UHF tuning) fully counterclockwise. Remove the VHF Channel Selector and Fine Tuning knobs and the UHF dial, but do not turn shaft. Replace the UHF dial so that the number 80 will be visible thru the UHF window in the VHF Channel Selector knob. Replace the Fine Tuning and VHF Channel Selector knobs.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



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VHF TUNER #CL5661

OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KD120, U, KD188, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (Ch. GD, GDU, GH, GHU)

TUNER #CL5661 PARTS LIST & DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BQ7A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6AT8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	12			NPO-DI 12	TCZ-12	C10Q12C	TCO-12			NPO 10%
C202	47			NPO-DI 47	DD-470	L10Q47	ED-47		MS-447	10%
C203	2.7									10%
C204	2.2									NPO 10%
C205	1000			EF-001	MFT-1000				503C-D1	
C206	2.7									NPO 10%
C207	1.5				TCZ-1R5		TCO-1.5			±.25mmf
C208	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C209	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C210										
C211	50			DI -00005	DD-500	L10Q5	ED-50	UC-545	5GA-Q5	
C212	39			DI-000039	DD-390	L10Q39	ED-39	UC-5439	5GA-Q39	
C213	2					C10V2C				
C214										
C215	.39									
C216	1000			EF-001	MFT-1000				503C-D1	
C217	5			NPO-DI 5	DD-050	L10V5	ED-5	ZT-555	5TCCB-V5	10%
C218	1000			EF-001	MFT-1000				503C-D1	
C219	1000			EF-001	MFT-1000				503C-D1	
C220	6.8			NPO-DI 6.8	DTZ-6R8	L10V68	TCO-6.8	ZT-5568	5TCCB-V68	10%
C221	10			NPO-DI 5	DTZ-10		TCO-10			NPO 5%
C222	2.2			NPO-SI 2.2	TCZ-2R2	CTA6V22C	TCO-2.2		5TCCB-V22	
C223	1.5									N2200
C224	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	
C225	1000			EF-001	MFT-1000				503C-D1	
C226	800			BPD-0008	DD-801	L10T8	ED-0008		5GA-T8	

RESISTORS

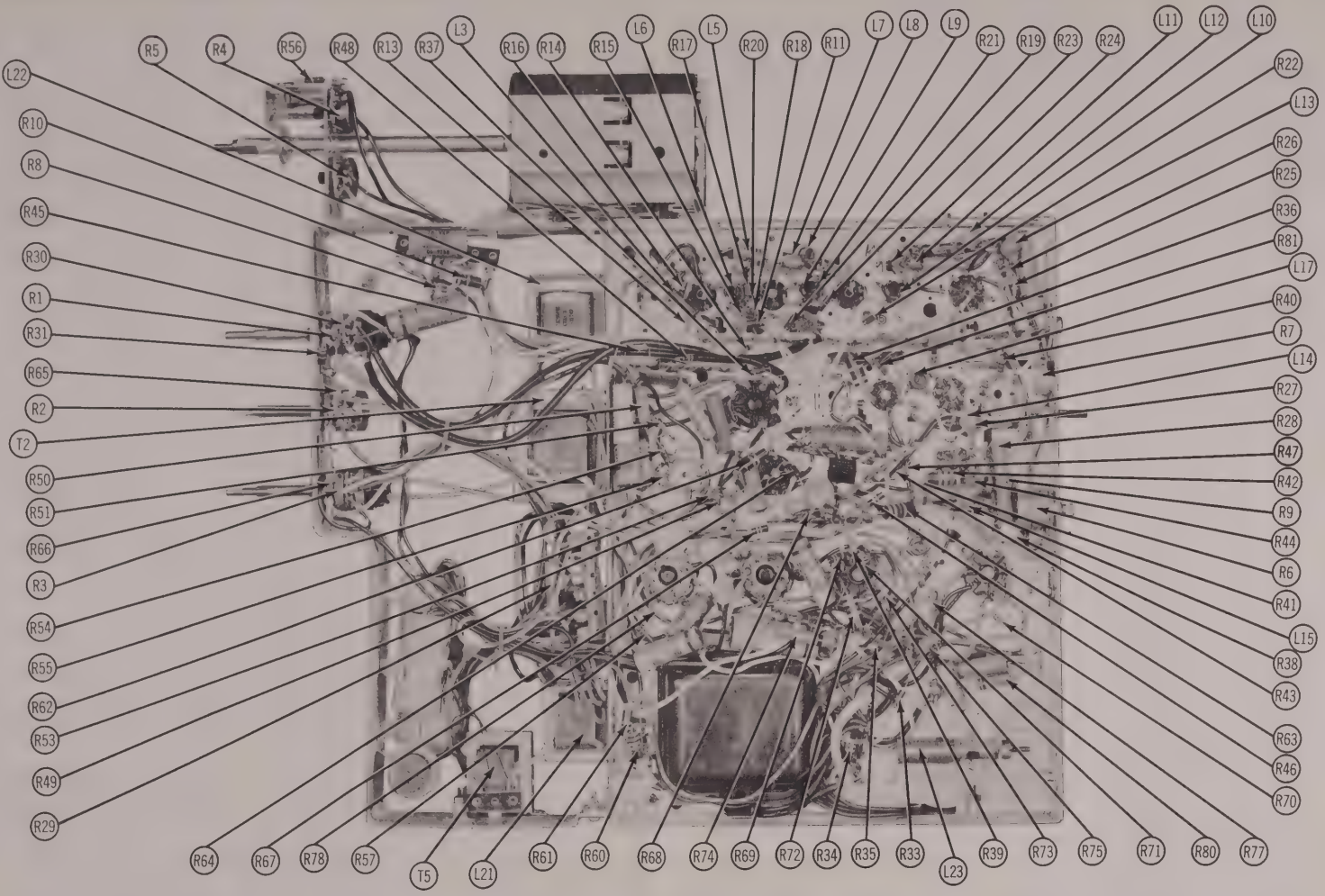
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R201	180Ω			
R202	470Ω			
R203	180Ω			
R204	470Ω			
R205	680K			
R206	10K			
R207	1.5meg			
R208	1meg			
R209	1000Ω			

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R210	270Ω			
R211	2200Ω			
R212	33K			
R213	100K			
R214	1800Ω			
R215	4700Ω			
R216	15K			
R217	4700Ω			

MISCELLANEOUS

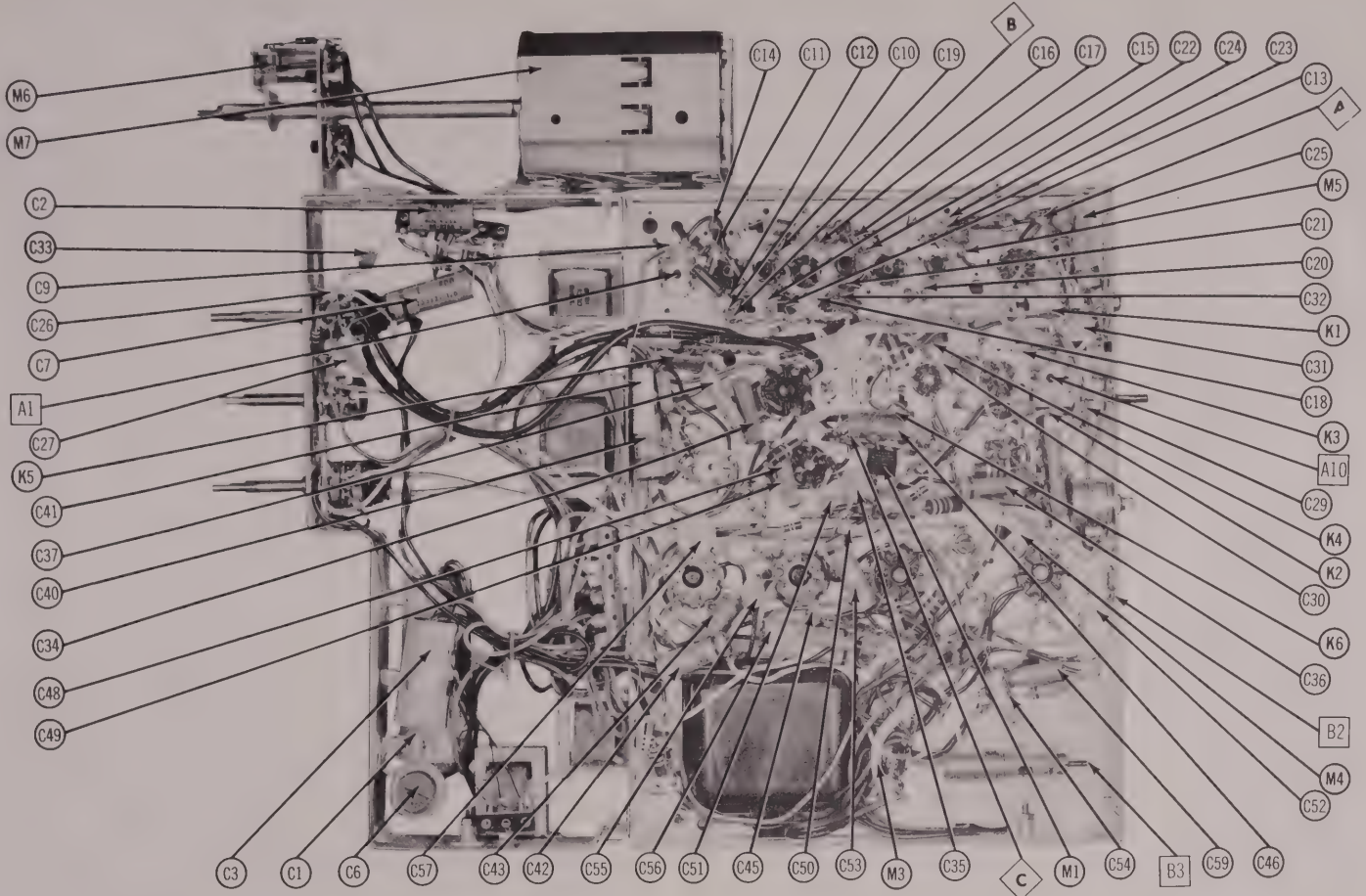
ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M201	Switch	SW2966-1	Distant-Local, DPDT, Slide type



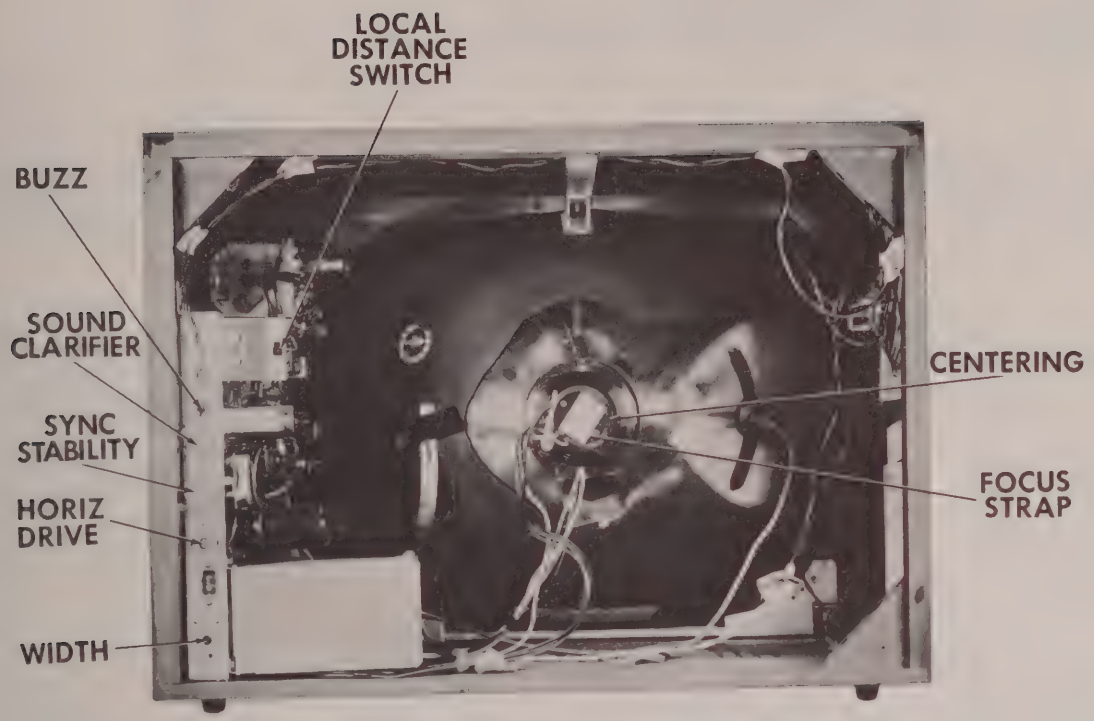
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD113, U, KD120, U, KD138, U, KH406, U, KH407, U, PRD118, U, PRD119, U, TD102, U (CH, GD, GDU, GH, GHU)

FOLDER 2



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and allow it to warm up for 2 minutes.

Tune in a TV station, preferably with a test pattern.

Connect a clip lead from point Ⓒ to chassis. Connect another clip lead across the Horizontal Frequency coil (L20).

Adjust the Horizontal Hold until the picture synchronizes horizontally. (It may float back and forth.)

Remove the clip lead from L20. Adjust the Horizontal Frequency slug (B1) until the picture is again in frequency. Remove clip lead from point Ⓒ and chassis.

Turn the Horizontal Drive Trimmer (B2) counterclockwise until a vertical white line (drive line) appears near the center of the screen, then turn clockwise until line just disappears. If drive line cannot be obtained, adjust B2 for proper width.

If B2 is adjusted, recheck adjustment of B1 and Horizontal Hold.

Adjust the Width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video-IF Amp	6BZ6	
V2	2nd Video-IF Amp	6BZ6	
V3	3rd Video-IF Amp	6CB6A	
V4	Video-Output-Noise Inv	6AW8A	
V5	Sound-IF Amp -Sync Sep	6L6	
V6	Audio-Det	6BN6	
V7	Audio-Output	6DS6GT	*6W6GT
V8	Vert. Sync Amp - Horiz. Sync Amp	12AU7	

ITEM No	USE	TYPE	NOTES
V9	Vert. Mult.-Vert. Output	12BH7A	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	6DQ6A	
V12	Damper	6AX4GT	
V13	HV Rect.	1B3GT	
V14	LV Rect.	5U4GB	

* Alternate

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V15	21CBP24A		21CBP24 1	21CBP24 2 24AEP24 2	① "Rivercrest" ② ② "Silver Screen 85"
	24AEP24		24AEP24 1		

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	350	CO-3360-1	PRS-025	BRRT0235	WT460		D-190 MT-4804	R3510 *
B	60	350							
C	4	350							
C2	4	50	CO-3756	PRS50V4	BRR4-50	TT50X5	TD-4-50	MT-4804	TVA-1402
C3	50	250	CO-2068-3	PRS250V50	BR5025	TC59	TD-50-450	MT-4550	TVA-1703
C4A	60	200	CO-3656	PR2-200	BRRN567	WD340		T-317 MT-05100	R3084 *
B	125	50							
C5	10	450	CO-4022-2	PRS450V10	BR1045	TC72	TD-10-450	MT-4510	TVA-1705
C9	10	450	CO-4022-2	PRS450V10	BR1045	TC72	TD-10-450	MT-4510	TVA-1705

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	.1	600		P488N-1	DF-104	CUB41P1	GEM-401	47M-P1	
C8	15		CCD15C	NPO-DI 15	DT2-15	CTA5Q5C	ST-5415	STCC-Q15	NPO 10%
C9	1000		CCD52K						
C10	1000		CCD52M	BPD-001	DD-102	BYA501	DC531	5HK-DI	10%
C11	330		CCD33K		MD-331	L10T33			10% ①
C12	1000		CCD52M	BPD-001	DD-102	BYA501	DC531	5HK-DI	
C13	1000		CCD52M	BPD-001	DD-102	BYA501	DC531	5HK-DI	③
C14	1000		CCD52M	BPD-001	DD-102	BYA501	DC531	5HK-DI	10%
C15	1000		CCD52K						
C16	.68		CO-3362	NPO-SI .68	TCZ-R68				10%
C17	6.8		CO6417	NPO-DI 6.8	DTZ-6R8	C10Y68C	ZT-5568	STCCB-V68	NPO 10% ③
C18	1000		CCD52K						
C19	1000		CCD52M	BPD-001	DD-102	BYA501	DC531	5HK-DI	10%
C20	1000		CCD52K						
C21	1000		CCD52K						10%
C22	1000		CCD52M	BPD-001	DD-102	BYA501	DC531	5HK-DI	
C23	6.8		CO6417	NPO-DI 6.8	DTZ-6R8	C10Y68C	ZT-5568	STCCB-V68	NPO 10%
C24	4.7		CO-1082	NPO-SI 4.7	TCZ-4R7	CTA5Y47C	ZT-5547	STCCB-V47	
C25	.047	400	CO6473	P488N-047	DF-503	CUB-5847	GEM-4147	47M-S47	
C26	330		CCD33K		MD-331	L10T33			10%
C27	30000		CCD303K	BPD-03	DD-303	BYB502		5HK-S2	
C28	.1	400		P488N-1	DF-104	CUB41P1	GEM-401	47M-P1	
C29	1-3								
C30	5000		CCD502K	BPD-006	DD-502	BYA10D5	DC535	5HK-D5	
C31	1000		CCD52K						10% ②
C32	5000		CCD502K						
C33	2000		CCD202M	BPD-002	DD-202	BYA10D2	DC532	5HK-D2	
C34	.01	600		P488N-01	DB-103	CUB6E	GEM-611	57M-SL	
C35	10000		CCD103M	BPD-01	DD-103	BYA10E	DC511	5HK-SL	
C36	.047	400	CO6473	P488N-047	DF-503	CUB-5847	GEM-4147	47M-S47	
C37	.0047	600					GEM-16347		10%
C38	10000		CCD103M	BPD-01	DD-103	BYA10E	DC511	5HK-SL	
C39	.035	400							10%
C40	.1	400		P488N-1	DF-104	CUB41P1	GEM-401	47M-P1	
C41	.01	1000		P1088N-01		CUB10E	GEM-1011	10TM-SL	
C42	.047	400	CO6473	P488N-047	DF-503	CUB-5847	GEM-4147	47M-S47	
C43	.02	400		P488N-02	DD-203	CUB4S2	GEM-412	47M-S2	
C44	.22	400		P488N-22		CUB4P22	GEM-4022	47M-P22	
C45	470	1000			MD-471				10%
C46	.1	200		P288N-1	DF-104	CUB2P1	GEM-301	37M-P1	
C47	3900		CC6405		1H5D39			M5-329	10%
C48	.001	600					GEM-1612		10%
C49	220		CCD221K		MD-221	L10T22		STCC-T22	10% ②
C50	680		RCM30A68K	1469-00068	MD-681	1R5T68		M5-368	10%
C51	.001	600					GEM-1612		10%
C52	110- 580		CT-3526						
C53	.047	400	CO6473	P488N-047	DF-503	CUB-5847	GEM-4147	47M-S47	
C54	.001	600					GEM-1612		10%
C55	10000		CCD103M	BPD-01	DD-103	BYA10E	DC511	5HK-SL	
C56	.22	400		P488N-22		CUB4P22	GEM-4122	47M-P22	
C57	200	2000							10%
C58	68	3000	CO4520					30GA-Q68	10%
C59	.01	600		P668N-01	DB-103	CUB6E	GEM-611	57M-SL	④

① Some versions may use 1000mmf 10% in this application (Part #CCD103K).
② Not used in some versions.
③ Some versions may use 33mmf, others 47mmf and still others 56mmf in this application. Replace with original value.
④ Some versions may use .047 @ 600V in this application.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1500Ω	½	PT5665				UE2268	Contrast
B	Insug						Not Req.	Volume
C	Switch						Not Req.	Push type. On-Off
R2A	Insug	½	PT5704	F1-51	RTV-869		UE3593	Horiz. Hold
B	2meg	½		H2-67	Not Req.	QH-956	** UE3593	Vert Hold
R3A	1.5meg	½	PT5718				UE16988	Brightness
B	500K						Not Req.	Tone
C	Switch						Not Req.	Push type. 3D
R4A	5000Ω	½	PT3819-2	AB-10	B47-5000-S	QH-114	TA55L	Vert. Lin.
B	Shaft			AK-1	Not Req.	TQ	Not Req.	
R5A	2.5meg	½	PT3008-1	AB-83	B47-2.5meg -S	QH-239	TA255L	Height
B	Shaft			AK-1	Not Req.	TQ	Not Req.	
R6A	2meg	½	PT3554	AB-75	A47-2meg-S	QH-139	U58	Stability
B	Shaft			AK-1	FK3-1/4	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1	* SWF-12	76-1	US-26	AGC
R7	500Ω	2-WW	PT3611		39-500		FL-500	Sound

* "Concertrift" Equivalent: K-8 Kit, Base Elements & Shafts, RH-137, PH7-118 (Panel) (Not available as a factory assembled control) RH-139, RH-390 (Rear)
** "ETA-LOC" Equivalent : FA16L, OM500, RU26L, UM500
* Use KB with CKL "blue label" controls and KR with "red label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R8	470K			
R9	150K			
R10	2300Ω	1		
R11	330Ω			
R12	15Ω			
R13	15K		REB153K-1	
R14	1000Ω			
R15	330Ω			
R16	47Ω			
R17	33K			
R18	1000Ω			
R19	330Ω			
R20	47Ω			
R21	4700Ω			
R22	330Ω			
R23	180Ω			
R24	12K			
R25	3900Ω			
R26	47K			
R27	15K		REB153K-1	
R28	68000Ω	4	RE5833	
R29	47K	2		
R30	1500Ω			
R31	33Ω			
R32	150K			
R33	10K			
R34	22K			
R35	150K			
R36	3300Ω	2		
R37	1meg			
R38	560K			
R39	1.5meg			
R40	22K		Note 2	
R41	82K			
R42	47K	2		
R43	56K			
R44	2700Ω			

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R45	47K			
R46	100K			
R47	56K			
R48	82K			
R49	680K			Note 3
R50	1.5meg	1	REC155K-1	
R51	1.5meg			
R52	12K			
R53	47K			
R54	1.5meg			
R55	150K			
R56	560Ω			
R57	3700Ω			
R58	560Ω			
R59	560Ω			
R60	330K	1		
R61	330K	1		
R62	33K	1		
R63	3300Ω	2		
R64	8200Ω 5%			
R65	2.7meg			Note 4
R66	330K		REB334K-A	
R67	82K			
R68	8200Ω			
R69	47Ω			
R70	47K			
R71	470K			
R72	3300Ω	2		
R73	5600Ω	2		
R74	1000Ω	2		
R75	150K			
R76	33Ω	1		
R77	47K			
R78	4700Ω			
R79	3.3Ω	1	RE4419	
R80	100K	1		
R81	150Ω			

Note 1. Not used in some versions
Note 2. Some versions may use 47K in this application.
Note 3. Some versions may use 620K in this application.
Note 4. Some versions may use 2.2meg in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	CL25476					Wound on 1meg resistor
L2	47.25MC Trap	CL25545					
L3	Resonant Choke	CL25413					15 Microhenries
L4A	1st. Video IF	CL4806-1		TV-129			
B	47.25MC Trap						Includes Cap.
L5	Fil. Choke	CL2437	19-1001	BC-562	4604		
L6	2nd. Video IF	CL4851	17-4522	TV-130	6219	VF-3	
L7	Fil. Choke	CL2437	19-1001	BC-561	4604		
L8	47.25MC Trap	CL4753					Includes Cap.
L9	3rd. Video IF	CL4851	17-4523	TV-130	6219	VF-3	
L10	4th. Video IF	CL4851	17-4524	TV-130	6219	VF-3	
L11	Resonant Choke	CK6415	*19-3180	*TV-184	*6180	*VP-5	6.8 Microhenries
L12	Shunt Peaking Coil	CL2538					180 Microhenries, wound on 12K resistor
L13	Shunt Peaking Coil	CL2537	a19-4280	aTV-183	a6179	aVP-5	150 Microhenries, wound on 39K resistor
L14	Series Peaking Coil	CL2627	*19-3300	*TV-199	*6155		300 Microhenries, wound on 12K resistor
L15	Shunt Peaking Coil	CL25491		+TV-206	+6148		750 Microhenries, wound on 1meg resistor
L16A	1st. Sound IF	TR3386-1					
B	4.5MC Trap						
L17	2nd. Sound IF	CL5706					
L18	Quadrature Coil	CL3603-1			14R	SD-5	Includes Cap.
L19	Resonant Choke	CK6415					6.8 Microhenries

* Parallel with 12K resistor. a Parallel with 39K resistor. + Parallel with 1meg resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES		REPLACEMENT DATA						
	PRI	SEC	OLYMPIC PART No	Meissner PART No	Merit PART No	Miller PART No	Ram PART No	Thordarson PART No	NOTES
L20	89Ω		CL5464-1						

FILTER CHOKE

ITEM No	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(L)	OLYMPIC PART No	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No	Triad PART No
L21	220A	62Ω	1.7 Hy.	CK6447	CS030 ①			C-3325 ①	26C43 ①	C-34X ①
L22	.060A	62Ω	1.1 Hy.	CK25465						

① Drill new mounting hole.

COILS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA						
		OLYMPIC PART No	Halldorson PART No	Merit PART No	Miller PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
L23	Width Coil	CL5402	RF800 ①	MWC-6	8322	201R12	WC-8	WC-22	WLC-5

① Use terminals #3 and #4.

TRANSFORMER (POWER)

ITEM No	RATING			REPLACEMENT DATA						
	PRI	SEC 1	SEC 2	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.4A	550VCT @ .220A	5V @ 3A	TR382L-2					26R88	R-64BC
	SEC 3	SEC 4	SEC 5							
	6.3V @ 8.5A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							
		OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No	Stancor PART No	Thordarson PART No	Triad PART No.
T2	Vert. Output	TR3689D	Z1900 ①	A-3039 ①③	V312 ①③		A-8141 ①③	26S75 ①	A-114X ③
T3 A	Yoke-Horiz. (18MH)	CL2600-4	DF907 ①③	MDF-92	T90F10/43		DY-18A	Y-18 ③①	Y-41 ④
B	(90°)-Vert. (19MH)			③①	③①		③④		NW3 ④
	Rear Cover & Centering Device	PP5640							YC-4 ④
	Yoke Clamp	SP567Z							CL-1
T4	Horiz. Output	TR3595-5			XI81 *				D-130 *

① Use 18Ω turns ratio.
② Remove pin #1 of yoke socket from ground, connect red lead to junction of R5, C5, R74 and pin #7 of yoke socket, and green lead to pin #1 of yoke socket.
③ Drill new mounting hole(s).
④ Use original horizontal damping network, if necessary.
⑤ Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	9		9					9
	8		8					8
	6		6					6
	3		4					3
	2		3 & 2					2
	1		1					1
Connect Width Coil Across		2 & 1	2 & 1					2 & 1
Special Notes								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		OLYMPIC PART No.	REPLACEMENT DATA					NOTES
	PRI	SEC		Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No	Triad PART No	
T5	3800Ω	8-8Ω	TR25367							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SK4342 ①	4AD7	① Used in Models TD102, U
SP2	3½"	PM	4-8Ω	SK25463 ②	3AIZ4.3	② Used in Models TD102, U, CD108, U, CD109, U,
	8"	PM	3-4Ω	SK3906-2 ③	8AZ1	CD110, U, KD118, U, KD119, U, KD120, U, CH402, U,
	8"	PM		SK3906 ④		KH406, U, KH407, U
	6" x 9"	PM		SK3758 ⑤		③ Used in Models CD108, U, CD109, U, CD110, U, CH402, U
						④ Used in Models KD119, U, KH406, U, KH407, U
						⑤ Used in Models KD118, U, KD119, U

OLYMPIC MODELS CD108, U, CD109, U, CD110, U, CH402, U, KD118, U, KD119, U, KH406, U, KH407, U, PKD118, U, PKD119, U, TD102, U (CH, 9D, 9GU, 9H, 9HU)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K1	Video Output-Noise Inv. Grid	330mmf, 330mmf, 10000mmf, 1meg, 1meg, 1.5meg	PC25577	
K2	Sound IF-Sync Sep Circuits	5000mmf, 5000mmf, 6800Ω, 47K, 68K, 82K, 100K	PC25580	
K3	Sync Coupling	220mmf, 1000mmf, 2000mmf, 5000mmf, 1000Ω, 470K, 2.2meg	PC25578	
K4	Audio Det. Circuits	47mmf, 470mmf 10%, 1000mmf 10%, 5000mmf, 5000mmf, 1000Ω, 47K, 330K, 1meg	PC25579	
K5	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 8200Ω, 8200Ω, 22K	PC-2435	Aerovox PA501 Centralab PC-100 or PC-104 Cornell-Dubilier 115TM1 Sprague V-3
K6	Horiz. AFC Circuit	56mmf 10%, 100mmf 10%, 1000mmf 10%, 1000mmf 10% 4700mmf 10%, 68K, 82K, 100K, 560K, 620K, 1meg, 1meg	PC25571	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	OLYMPIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1		RF5465	K1515	SD-91 ①		① Silicon Type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	C	3/8A 250V	FU4345	FH4344	332.375 (C-3/8A-250V)	346002	C 3/8	HC 3/10 to 1/2
M3	#26 AWG Copper Wire 3½" Length							
M4	#26 AWG Copper Wire 3½" Length							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	
M5	1N60	1N64	1N60	1N295	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M6	Lamp	BU187	#47
M7	Tuner	CL5661	VHF Ch. GD, GH
	Tuner	CL5662	VHF with UHF provisions, Ch. GDU, GHU
	Tuner	CL5825	UHF Ch. GDU, GHU
M8	Switch	SW2960-1	Local-Distant (DPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	PP3656-1	Models CD108, U, CD109, U, CD110, U, KD118, U, KD119, U, KD120, U, KD188, U, PKD118, U, PKD119, U, TD102, U
Safety Glass	PP3939-1	Models CH402, U, KH406, U, KH407, U
Mask	PP3646-2	Models CD108, U, CD109, U, CD110, U, KD118, U, KD119, U, KD120, U, KD188, U, PKD118, U, PKD119, U, TD102, U
Mask	PP3938	Models CH402, U, KH406, U, KH407, U
Knob	KN5768	Fine Tuning, UHF Models
Knob	KN5896	Fine Tuning, VHF Models
Knob	KN5895	Channel Selector, VHF Models
Knob	KN5897	Channel Selector, UHF Models
Knob	KN5898	UHF Dial
Knob	KN5852-2	Contrast, Brightness, Horiz. Hold
Knob	KN5853-2	Vert. Hold, On-Off-Volume
Knob	KN5886-2	3-D Tone
Cabinet	CA25301	Models TD102, U
Cabinet	CA25304	Models CD108, U
Cabinet	CA25305	Models CD109, U
Cabinet	CA25307	Models KD118, U
Cabinet	CA5862	Models KD119, U
Cabinet	CA25309	Models KD120, U
Cabinet	CA25478	Models CH402, U
Cabinet	CA25313	Models KH406, U
Cabinet	CA25314	Models KH407, U

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

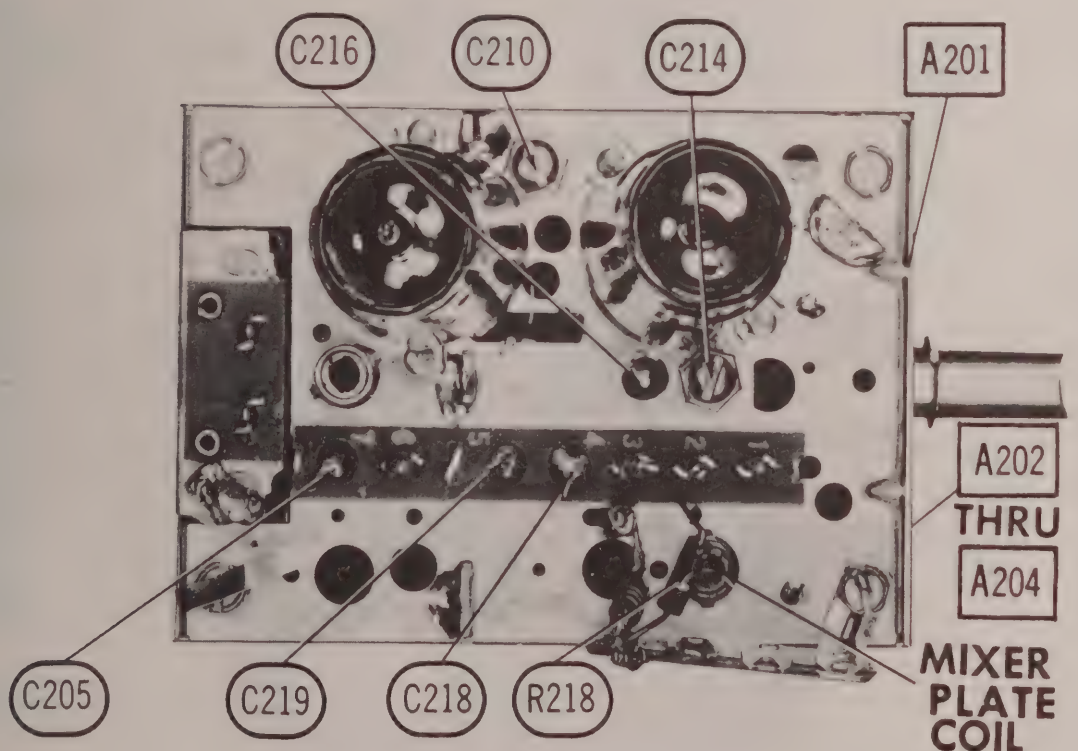
TUNER #CL5661 ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

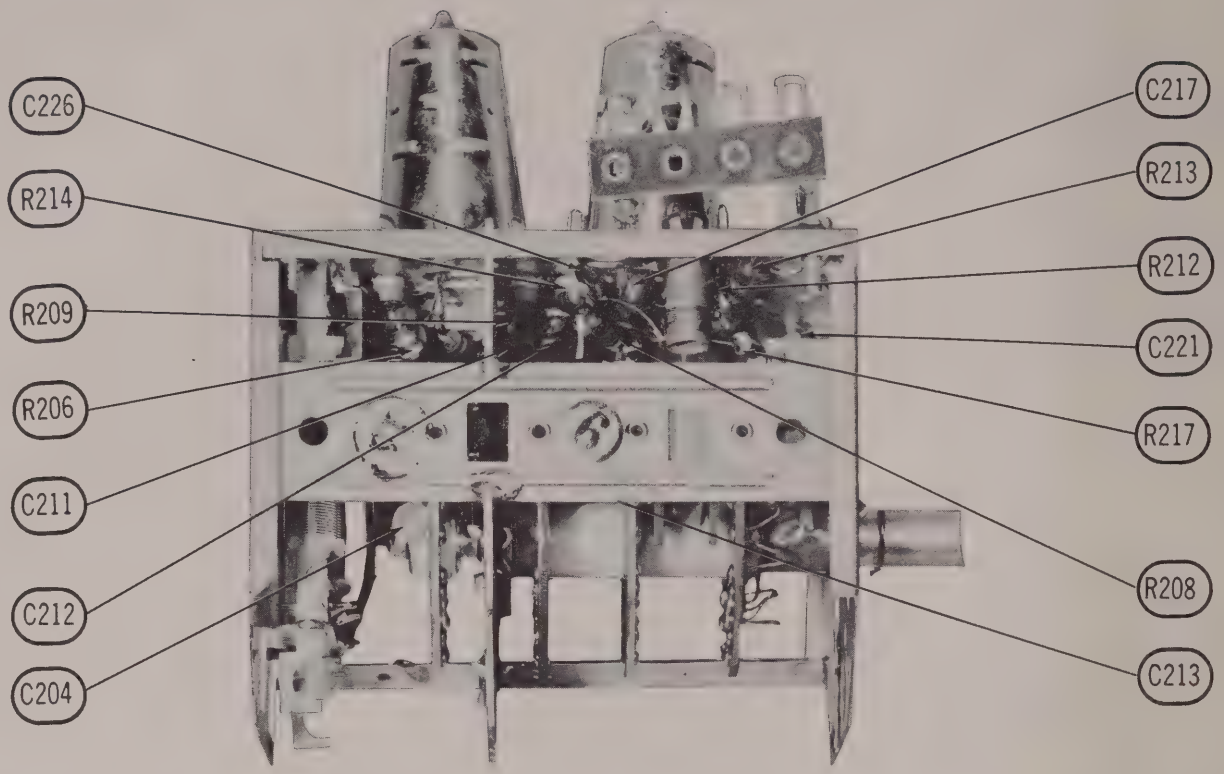
Channel 13 oscillator adjustment slug (A201) is also used for adjusting the other high band channels 12 thru 7. Channel 6 oscillator adjustment slug (A202) is also adjusted for channel 5. Channel 4 oscillator adjustment (A203) is also adjusted for channel 3. Channel 2 oscillator slug (A204) is used for channel 2 only.
Turn the set on and tune in the highest high band channel and adjust controls for normal operation. Set fine tuning to the center of its range. Adjust A201 for best picture and sound. Switch to next high band channel. If necessary to adjust, do so by bending coil loop appearing at the hole to left of tuner shaft. Adjust for best picture and sound. Check adjustment of all high band channels in descending order. Switch channel selector to the highest low band channel 6 thru 2 operating in the area. Adjust proper slug for best picture and sound. If channel 5 or 3 require adjusting, it will be necessary to switch to the next higher channel, adjust slug SLIGHTLY, then switch back to the channel needing adjustment and check picture. Repeat until proper results are obtained. Repeat procedure until all channels operating in the area have been properly adjusted.

RF AND MIXER ALIGNMENT

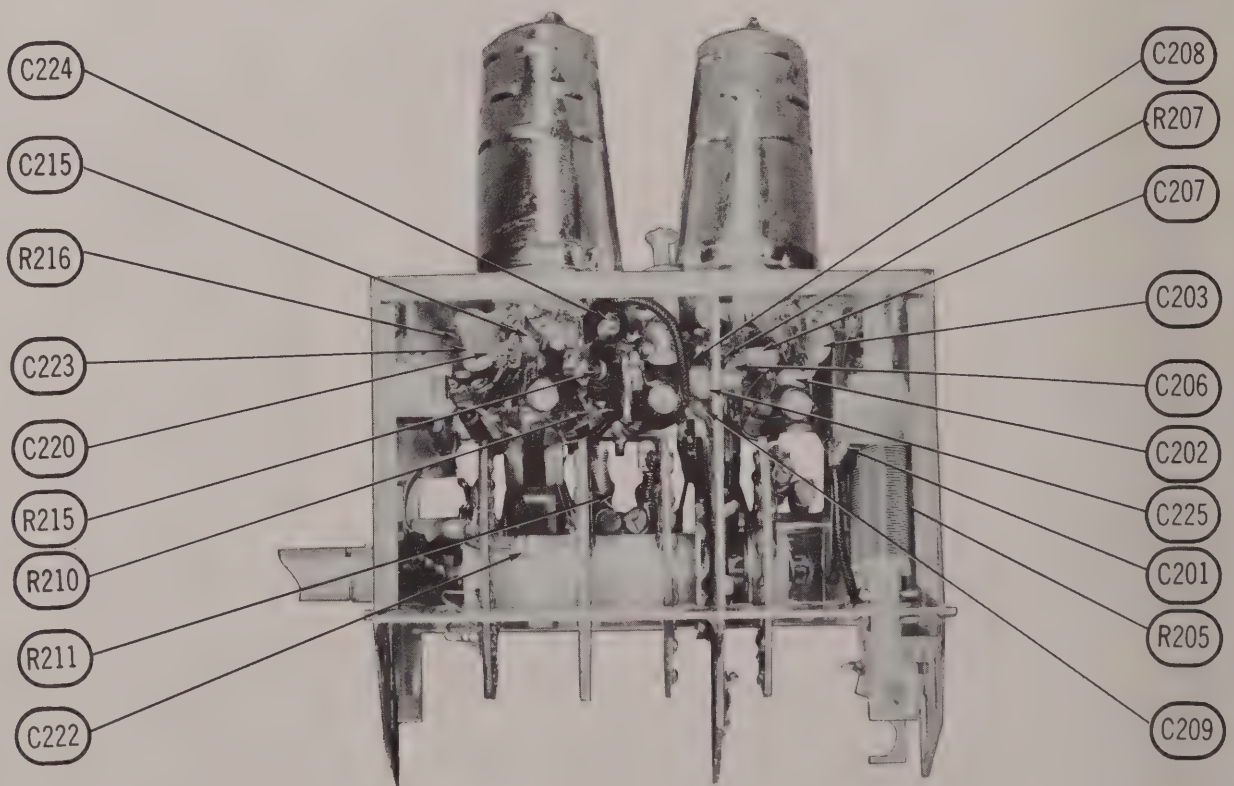
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



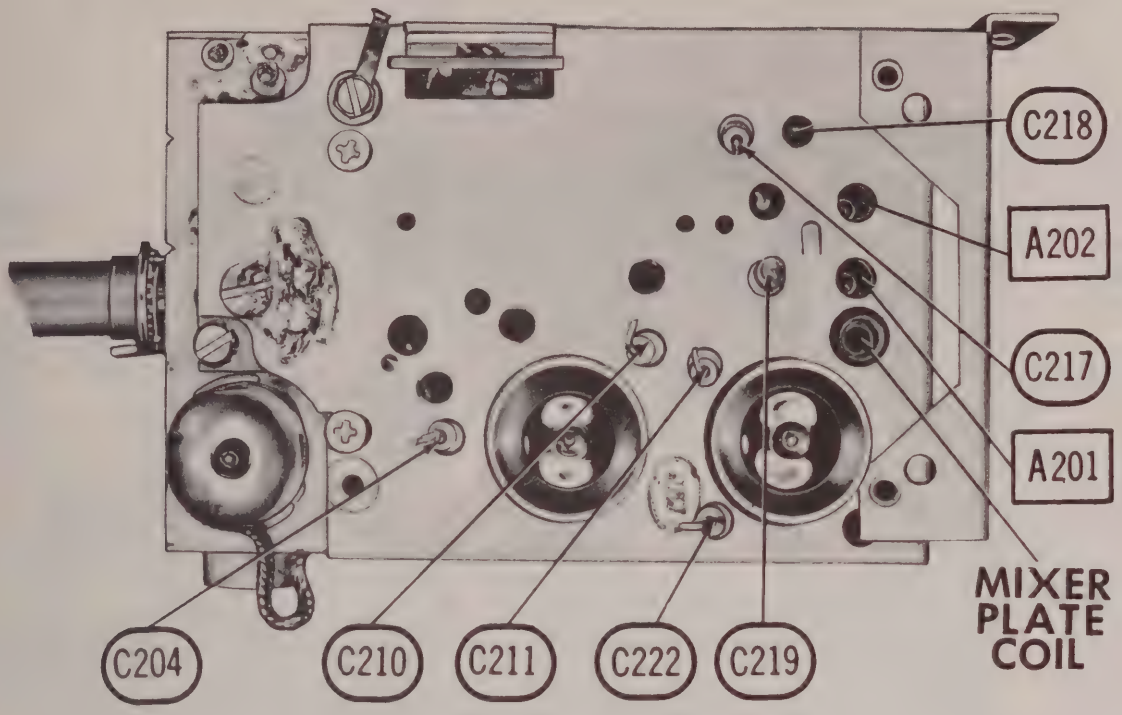
TUNER #CL5661 - TOP VIEW



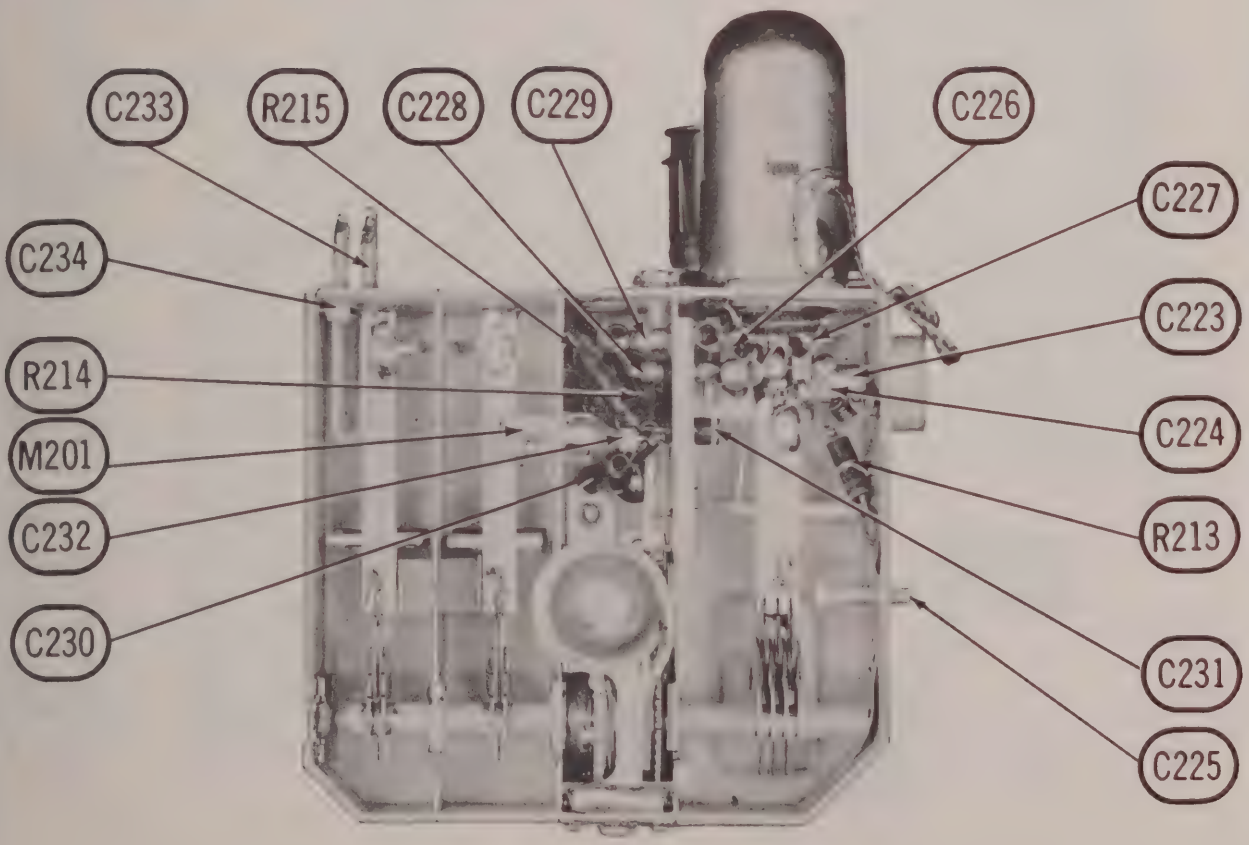
TUNER #CL5661 - LEFT SIDE



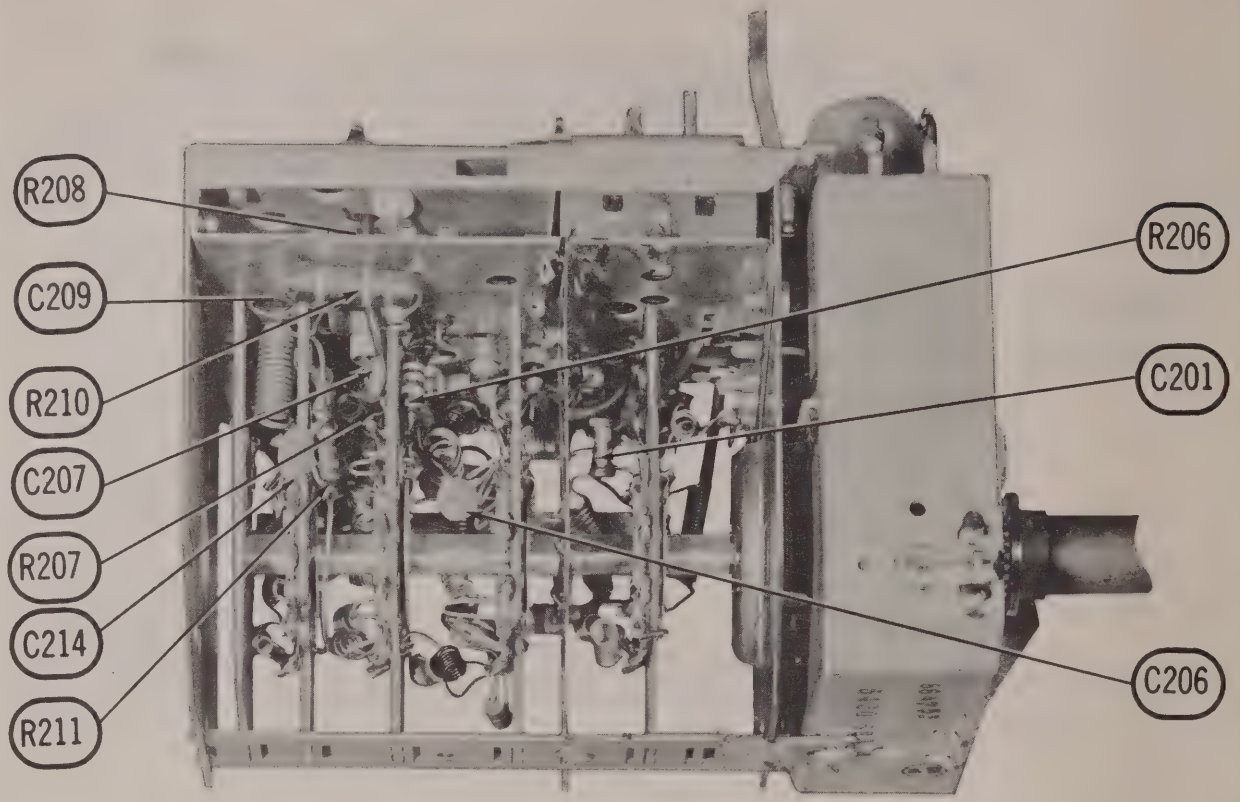
TUNER #CL5661 - RIGHT SIDE



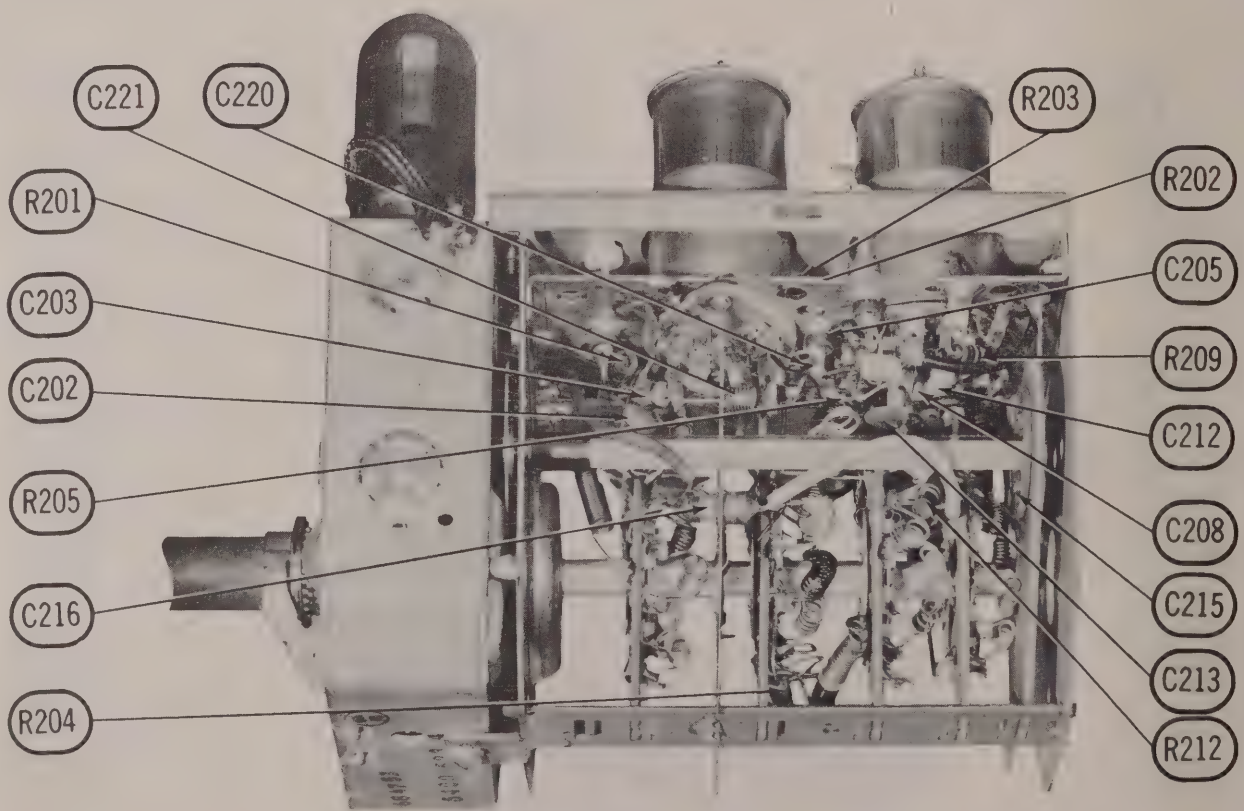
TUNER #CL5662 - TOP VIEW



TUNER #CL5825 - END VIEW



TUNER #CL5662 - LEFT SIDE



TUNER #CL5662 - RIGHT SIDE

CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	50K	47Ω	.1Ω	0Ω	■ 330Ω	■ 330Ω	0Ω		
V2	6BZ6	50K	47Ω	.1Ω	0Ω	■ 330Ω	■ 330Ω	0Ω		
V3	6CB6A	.1Ω	180Ω	.1Ω	0Ω	■ 330Ω	■ 330Ω	0Ω		
V4	6AW8A	3900Ω	• 2meg	† 29K	.1Ω	0Ω	• 110Ω	550K	† 47K	† 6800Ω
V5	6U8	■ 35K	100K	■ 25K	.1Ω	0Ω	† 1000Ω	0Ω	0Ω	2.6meg
V6	6BN6	• 330Ω	2.7Ω	.1Ω	0Ω	■ 3300Ω	13.5Ω	† 330K		
V7	6DG6GT	0Ω	0Ω	† 230Ω	† 52Ω	500K	TP	.1Ω	¶	
V8	12AU7	† 30K	130K	2700Ω	.1Ω	.1Ω	■ 40K	0Ω	2700Ω	0Ω
V9	12BH7A	‡2600Ω	1.5meg	• 2500Ω	0Ω	0Ω	• ‡2meg	• 1.7meg	47K	.1Ω
V10	6CG7	† 18K	1.7meg	820Ω	0Ω	.1Ω	† 85K	55K	820Ω	0Ω
V11	6DQ6A	0Ω	0Ω	NC	† 8900Ω	390K	TP	.1Ω	0Ω	TOP CAP ‡38Ω
V12	6AX4GT	NC	NC	¶	NC	† 0Ω	NC	0Ω	.1Ω	
V13	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡573Ω
V14	5U4GB	NC	¶	NC	55Ω	TP	52Ω	TP	¶	
V15	21CBP4A	0Ω	32K	Pin 6 ‡120K	Pin 10 ‡120K	Pin 11 •330K	Pin 12 .1Ω			
V201	6BS8	† 4300Ω	550K	INF	.1Ω	0Ω	INF	120K	0Ω	0Ω
V202	6AT8A	15K	■ 4700Ω	0Ω	0Ω	.1Ω	■ 1800Ω	■ 4700Ω	0Ω	133K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

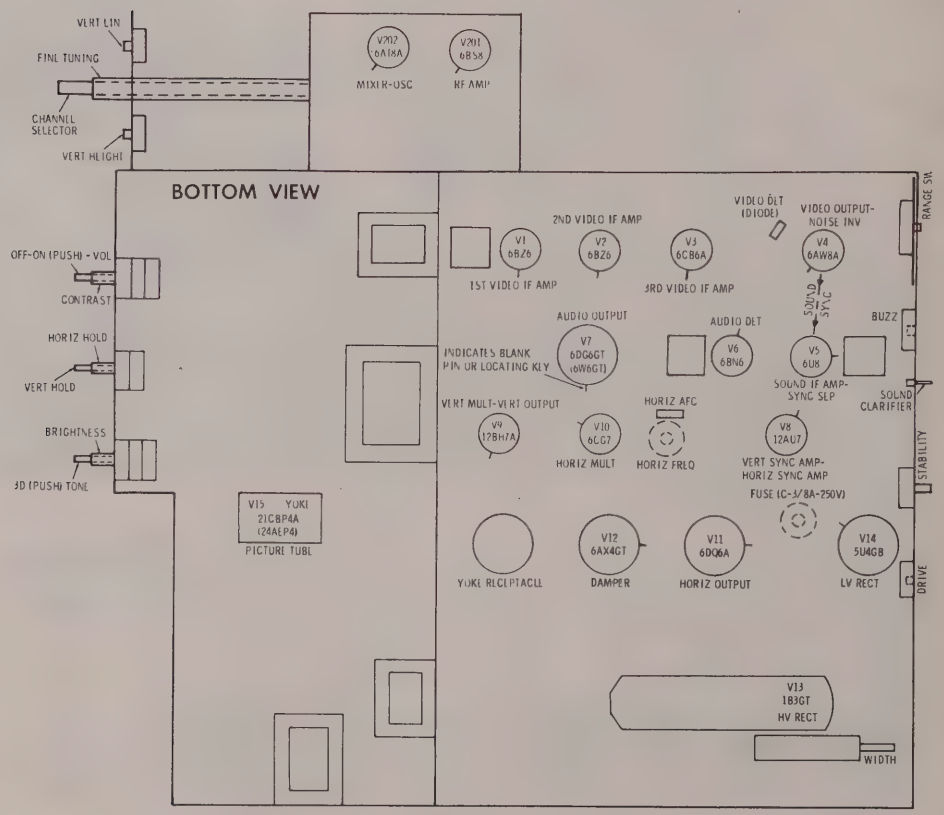
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

■ MEASURED FROM 150V SOURCE.

† MEASURED FROM 275V SOURCE. NC NO CONNECTION.

‡ MEASURED FROM PIN 3 OF V12. TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT* Folder

with CIRCUITRACE*

SILVERTONE MODELS 9118, 9119 (Ch. 528.51220, 222, 223, 230, 231, 232)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 front and 2 top push-on type knobs.
2. Remove 10 metal screws holding rear cover. Remove rear cover.
3. Remove the picture tube socket, yoke plug, HV lead and speaker leads.
4. Remove 1 metal screw connecting picture tube grounding lead to chassis.
5. Remove 1 metal screw holding tuner support bracket to cabinet.
6. Remove 3 metal screws inside top front holding control panel bracket to cabinet.
7. Remove 2 metal screws holding interlock and circuit breaker panel to cabinet.
8. Remove 2 bottom chassis bolts and 2 top metal screws holding chassis support braces.
9. Remove chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 9118 (CH. 528.51222)

SILVERTONE MODELS 9118, 9119 (Ch. 528.51220, 222, 223, 230, 231, 232)

TRADE NAME	Silvertone	MODELS	CHASSIS	MODELS	CHASSIS
		9118	528.51220	9119	528.51230
		9118	528.51222	9119	528.51231
		9118	528.51223	9119	528.51232
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Avenue, Chicago, Illinois				
TYPE SET	Television Receiver				
TUBES	Fifteen				
POWER SUPPLY	105-125 Volts AC, 60 Cycle		RATING 135 Watts, 1.36 Amp. @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)				

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 6 o'clock, and should be adjusted first. The LOW band adjustment is located at 12 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 push-on type knobs from the front. Remove 4 phillips head screws holding the front and remove the front. NOTE: Use only a mild detergent and warm water with a soft cloth to clean safety glass.

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied in steps by the position of a plug in the Focus Adjustment board. Readjust the Beam Alignment for the best focus consistent with maximum brightness.

C. Width
The width may be varied by means of a metallic sleeve located between the Yoke and the Picture Tube neck. Adjust sleeve in or out of the yoke for a picture slightly larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A10) located on top of chassis.

FUSE DEVICE

A 4.5Ω fusible resistor (R56) and a circuit breaker are used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

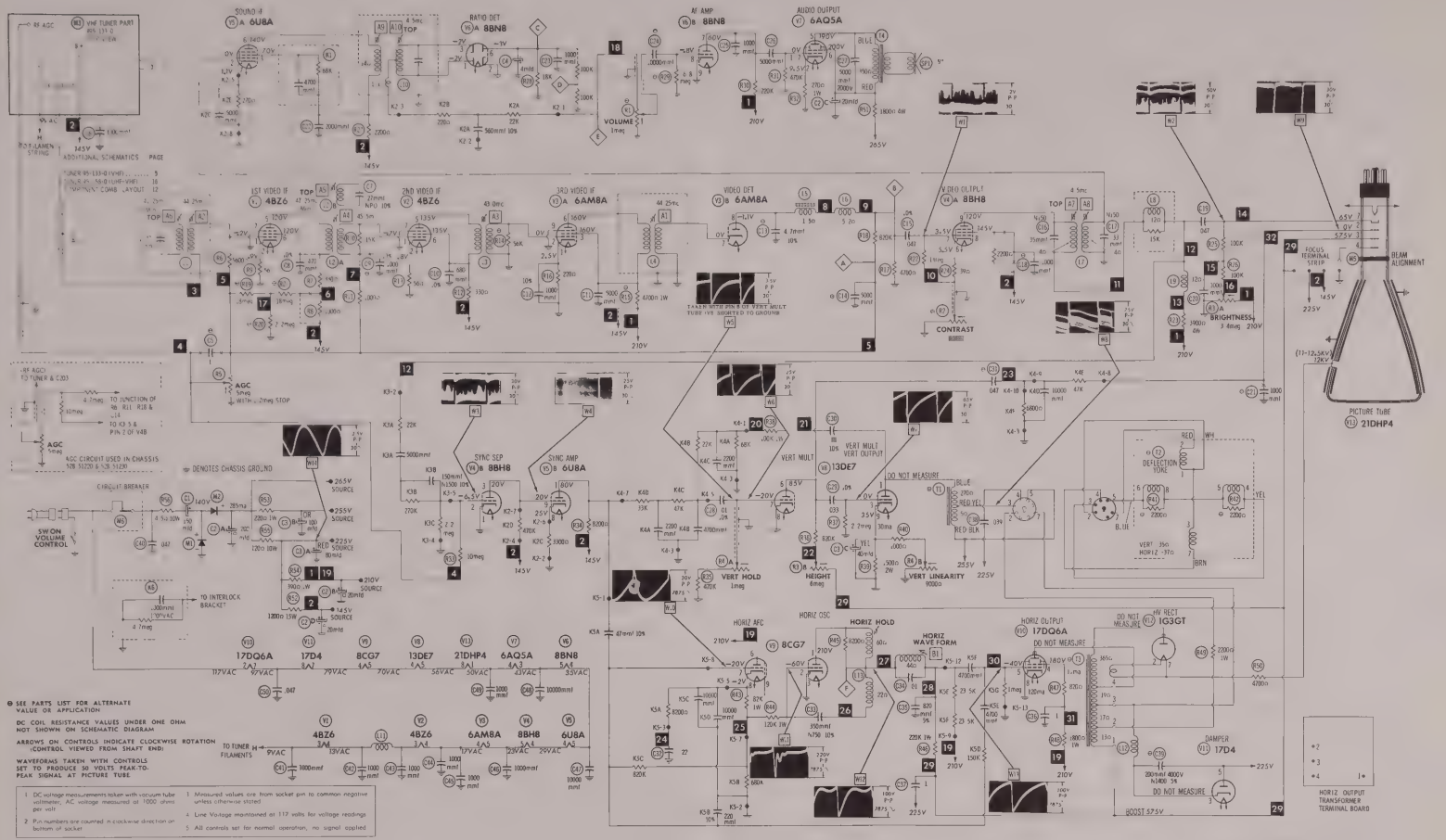
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

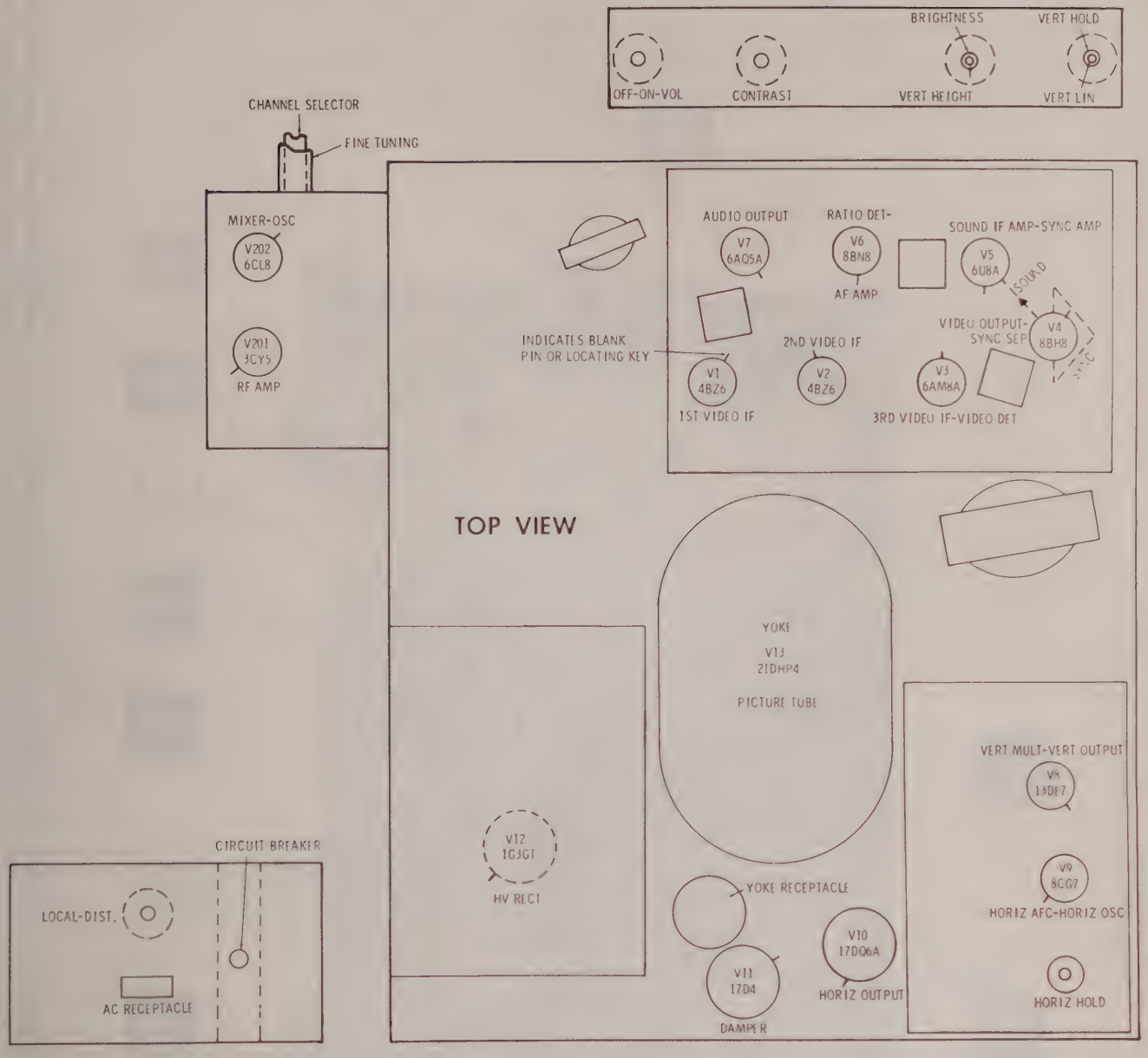
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H737

SET 417 FOLDER 3


SILVERTONE MODELS 9118, 9119
(Ch. 528.51220, 222, 223, 230, 231, 232)
SOUND IF
6U8A
RATIO DET
8BN8
AF AMP
8BN8
AUDIO OUTPUT
6AQ5A
VOLUME
1meg
1ST VIDEO IF
4BZ6
2ND VIDEO IF
4BZ6
3RD VIDEO IF
6AM8A
VIDEO DET
6AM8A
VIDEO OUTPUT
8BH8
CONTRAST
BRIGHTNESS
FOCUS
BEAM ALIGNMENT
PICTURE TUBE
21DHP4
AGC
SYNC SEP
8BH8
SYNC AMP
6U8A
VERT MULT
VERT OUTPUT
13DE7
VERT HOLD
1meg
HEIGHT
VERT LINEARITY
DEFLECTION YOKE
HORIZ AFC
8CG7
HORIZ OSC
HORIZ HOLD
HORIZ WAVE FORM
HORIZ OUTPUT
17DQ6A
DAMPER
17D4
HV RECT
1G3GT
HORIZ OUTPUT TRANSFORMER TERMINAL BOARD
BOOST 575V
CIRCUIT BREAKER
SW ON VOLUME CONTROL
AGC CIRCUIT USED IN CHASSIS 528.51220 & 528.51230
DENOTES CHASSIS GROUND
TO TUNER & CJ03
TO INTERLOCK BRACKET
265V SOURCE
255V SOURCE
225V SOURCE
210V SOURCE
145V SOURCE
17DQ6A
17D4
8CG7
13DE7
21DHP4
6AQ5A
8BN8
4BZ6
6AM8A
8BH8
6U8A
TO TUNER FILAMENTS
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1958
SILVERTONE MODELS 9118, 9119
(Ch. 528.51220, 222, 223, 230, 231, 232)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

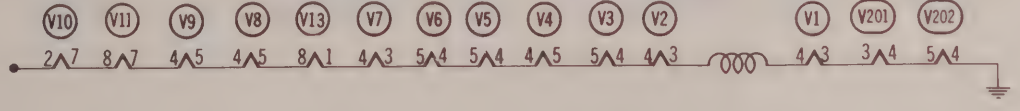
POWER SUPPLY FAILURE
No raster, no sound — Fusible Resistor (R56), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound — V9, V10, V11, V12, V13
No vertical deflection — V8
Poor vert. linearity or foldover — V8
Poor horiz. linearity or foldover — V9, V10, V11
Narrow picture — V9, V10, V11, M1, M2
Vert. off freq. — V8
Horiz. off freq. — V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3, V4
No pic, no sound, has snow — V201, V202, V1
No pic, has sound, has raster — V4, V13
Has pic, no sound — V5, V6, V7

SYNC FAILURE
No vert. sync — V4, V5
No horiz. sync — V4, V5, V9
No vert. or horiz. sync — V4, V5

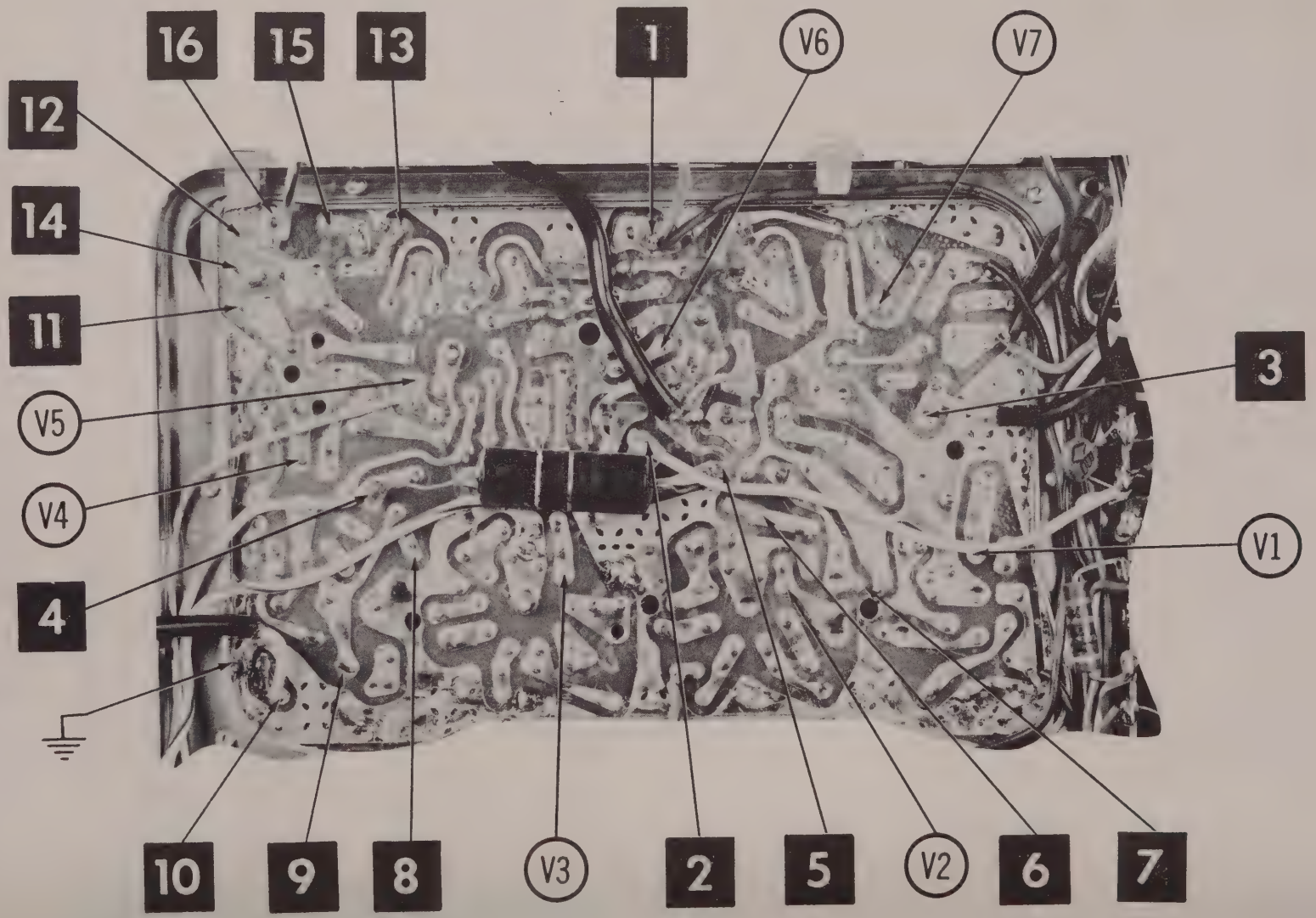
This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SILVERTONE MODELS 9118, 9119
(Ch. 528.51220, 222, 223, 230, 231, 232)

FOLDER 3

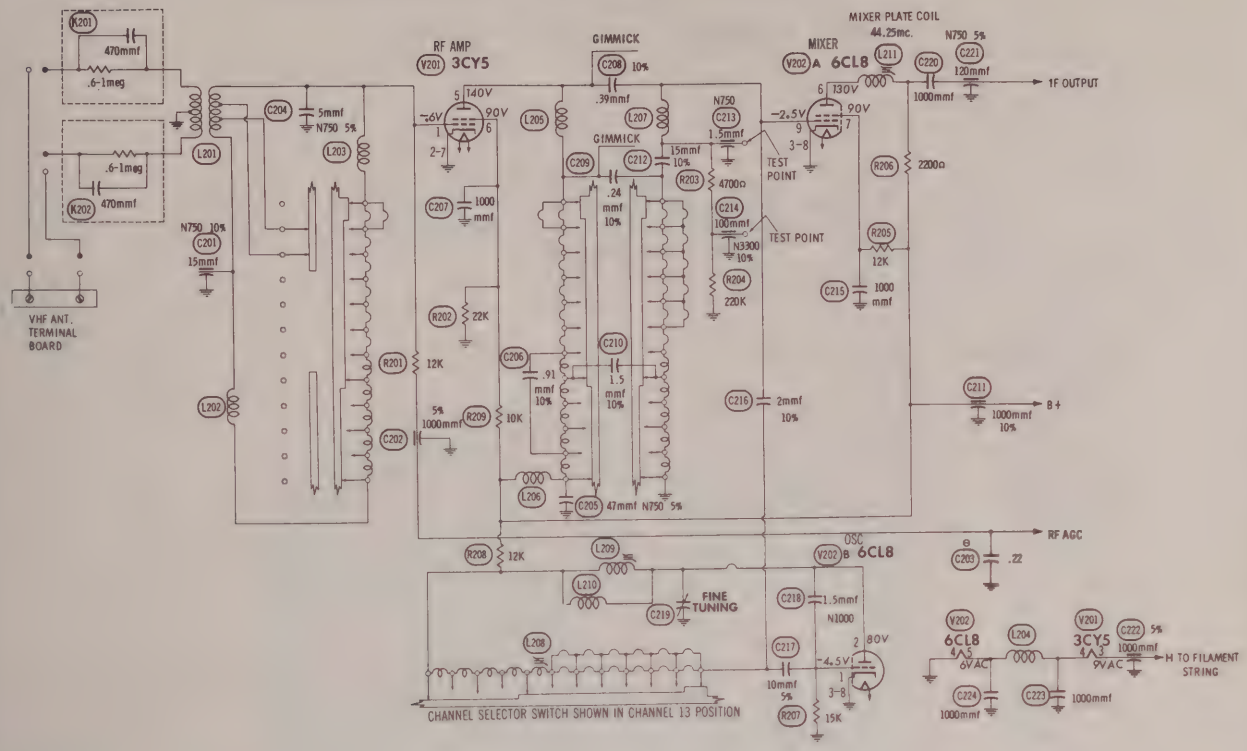
CircuiTrace Numbers 1 thru 16



A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

VIDEO IF, SYNC & SOUND PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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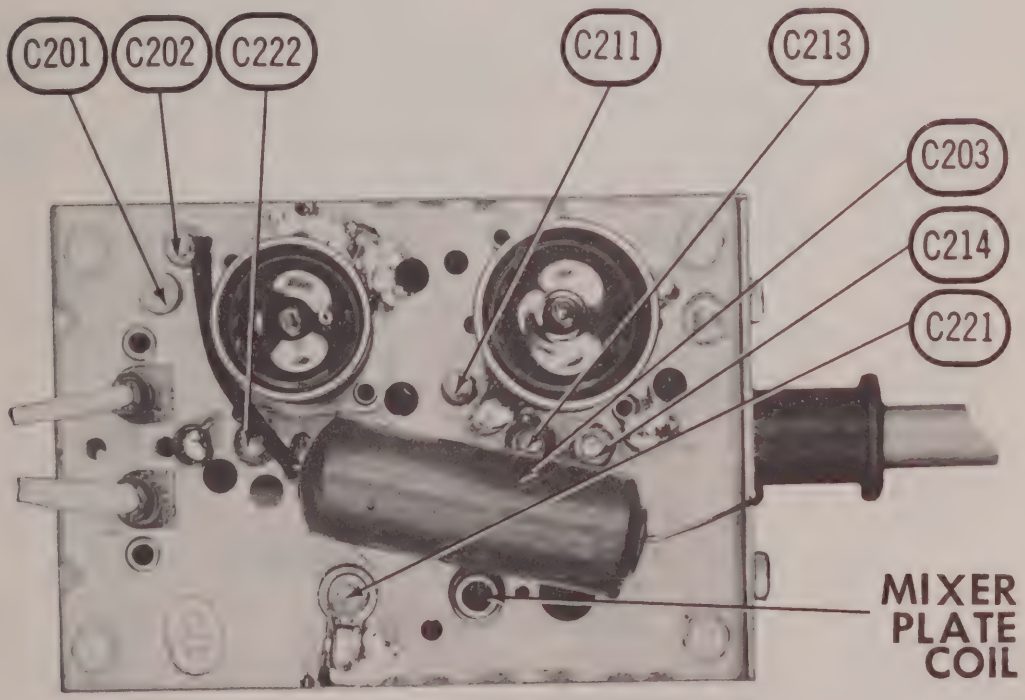
VHF TUNER 95-133-0



TUNER 95-133-0 - TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

95 – 133 – 0

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	3CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	15		258-150						N750 10%
C202	1000		244-1						5%
C203	.22	200	16-22428	P288N-22		CUB2P22	GEM-2022	2TM-P22	①
C204	5		225-509						N750 5%
C205	47		233-470		DTN-47				N750 5%
C206	.91		2101-918						10%
C207	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C208	.39		2101-398						10%
C209	.24		2101-248						10%
C210	1.5		2101-159	NPO-SI 1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	10%
C211	1000		244-1						5%
C212	15		222-150	NPO-DI 15	DTZ-15	C10Q15C		5TCC-Q15	10%
C213	1.5		259-159						N750
C214	100		252-101						N3300 10%
C215	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C216	2		2101-209						10%
C217	10		163-100	NPO-SI 10	TCZ-10	CTA6Q1C			5%
C218	1.5		173-159						N1000
C219			2262-506						
C220	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C221	120		246-121						N750 5%
C222	1000		244-1						5%
C223	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C224	1000		2033-23	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	

① Some versions may use .1mfd @ 200V in this application (Part #16-10423).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R201	12K		106-123	
R202	22K		106-223	
R203	4700Ω		106-472	
R204	220K		111-224	
R205	12K		106-123	

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R206	2200Ω		106-222	
R207	15K		106-153	
R208	12K		106-123	
R209	10K		106-103	

COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L201	Ant. Trans.	2309-5	
L202	RF Choke	310-5	
L203	Ant. Coil	310-5	Channel 13
L204	Fil. Choke	314-10	
L205	RF Coil	313-7	Channel 13
L206	RF Choke	301-25	

ITEM No.	USE	SILVERTONE PART No.	NOTES
L207	Mixer Grid	312-7	Channel 13
L208	Osc. Coil	5381-14	Channel 6
L209	Osc. Coil	5381-13	Channel 13
L210	Osc. Coil	310-8	Channel 13
L211	Mixer Plate	2110-9	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .6-1meg	330-1	Centralab Sprague	RC-471 R-9177
K202	Antenna Isolation	470mmf, .6-1meg	330-1	Centralab Sprague	RC-471 R-9177

TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

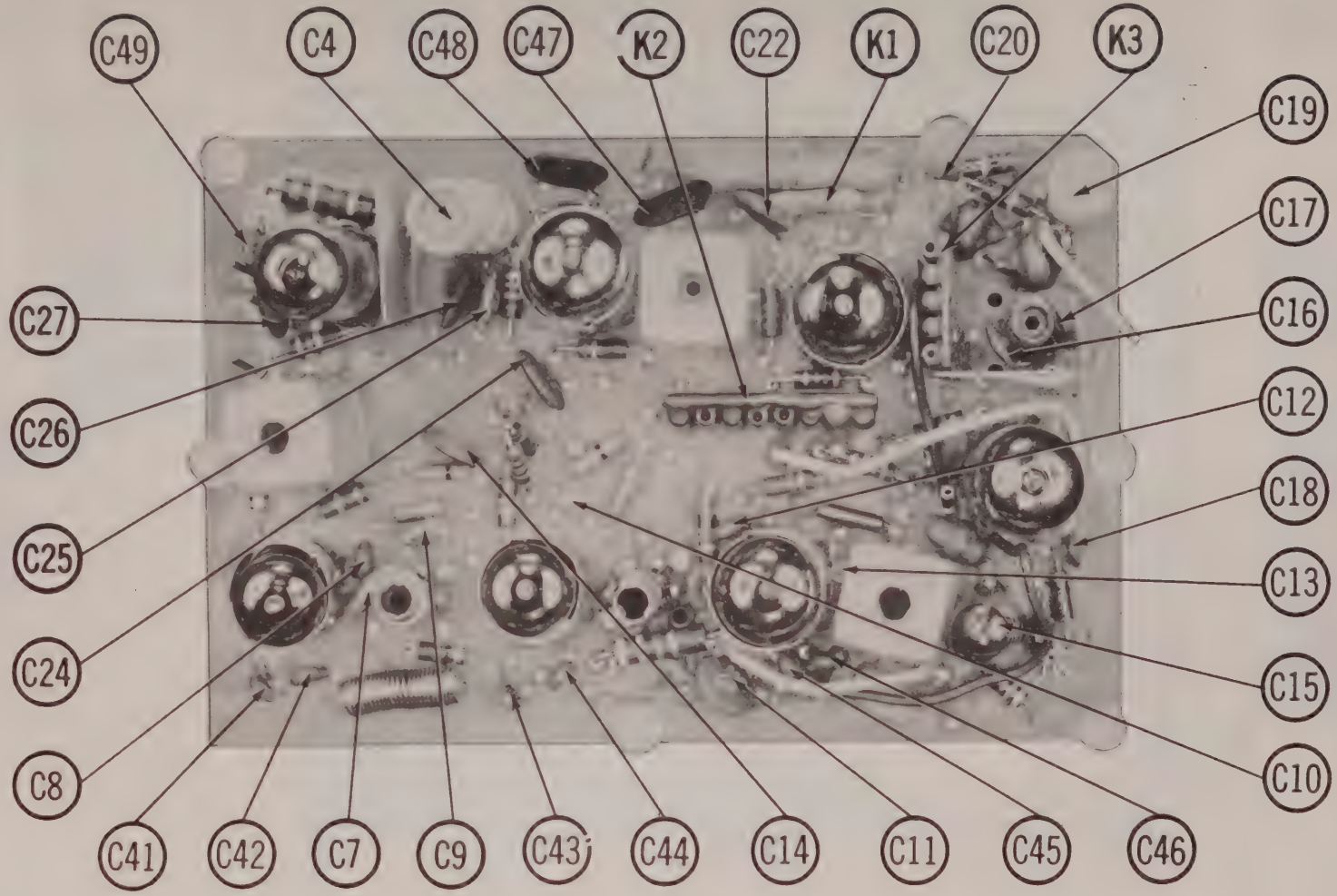
Set the Fine Tuning to the center of its range. One slug for high band adjustment is located at 2 o'clock, and should be adjusted first. The low band adjustment is located at 6 o'clock. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

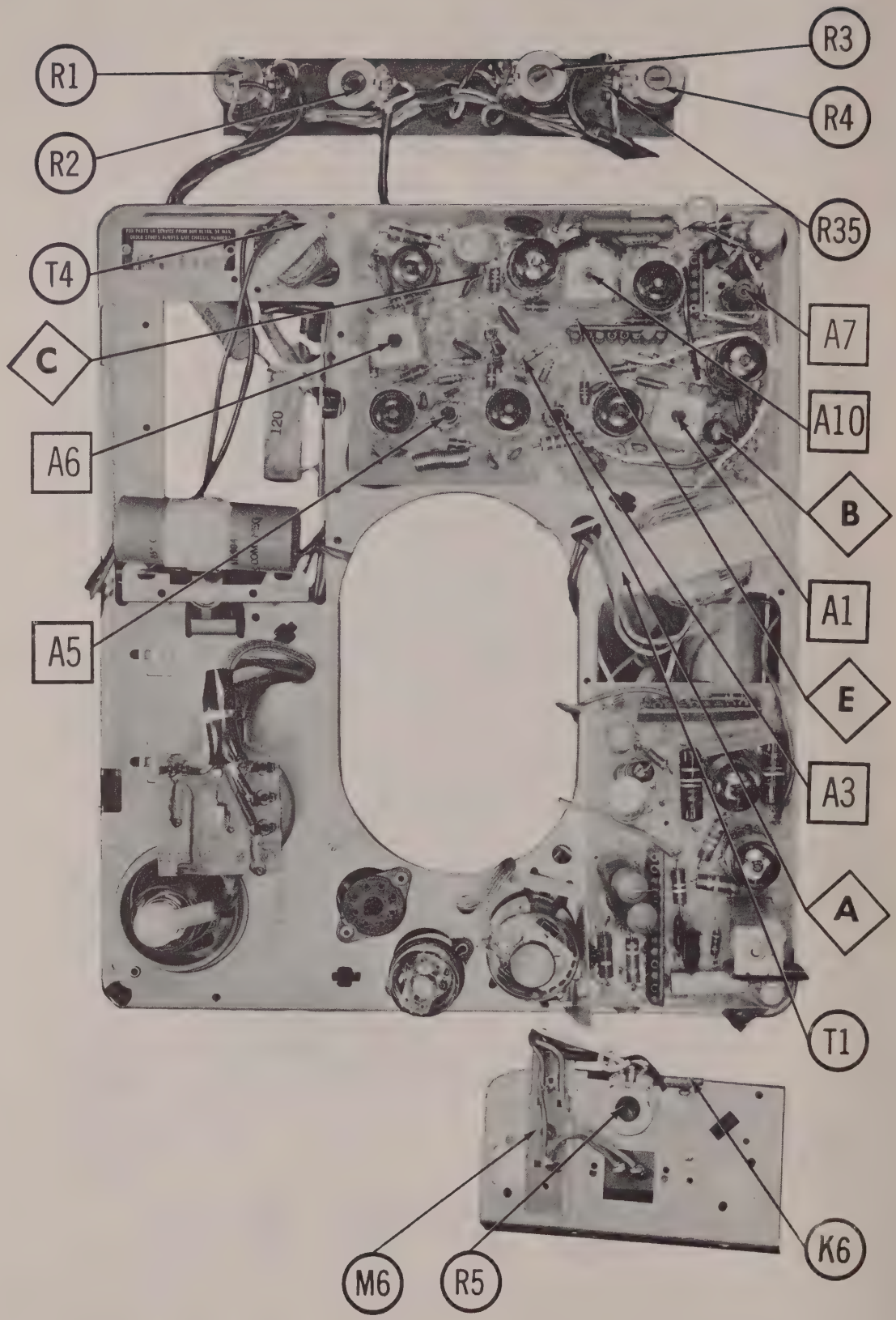
UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



VIDEO IF, SYNC & SOUND PRINTED BOARD - "C" & "K" IDENT

SILVERTONE MODELS 9118, 9119
(Ch. 528.51220, 222, 223, 230, 231, 232)



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Short antenna terminals together.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Detune A1, A4, A5, A6 and the Mixer Plate Coil by turning the cores almost out of the coil forms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the mixer-osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.25MC	Any non-interfering channel	DC probe thru 10K to point (B). Common to chassis. (Across video det. load).	A1, A2 & Mixer Plate Coil	Attenuate generator output to maintain not more than 2.5 volts on VTVM. Adjust for maximum deflection.
2.	"	"	43.0MC	"	"	A3	"
3.	"	"	45.5MC	"	"	A4	"
4.	"	"	47.25MC	"	"	A5	Increase generator output. Adjust A5 for MINIMUM deflection. Repeat steps 3 and 4.
5.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Short antenna terminals together.
Attenuate sweep generator output to maintain not more than 2 volts peak to peak on the scope (-3 volts DC at point (B)).
If separate marker generator is used, couple loosely to the sweep cable.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Place a thin insulated metal strip between the mixer-osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.25MC (10MC Swp)	41.25MC 42.75MC 43.8MC 44.25MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across video det. load).		Check for response similar to Fig. 1. Retouch Mixer Plate Coil if necessary to place 45.75MC marker at 50%. Retouch A1 for proper tilt.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point (C) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001mfd	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (E). Common to point (D).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

4.5MC TRAP ALIGNMENT

Tune in a local TV station and check the picture for evidence of 4.5MC beat interference. If necessary, retouch A7 until the horizontal scanning lines are smooth and continuous.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

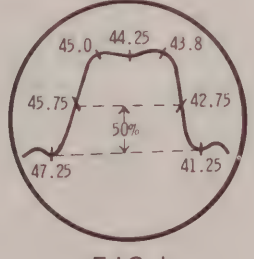


FIG. 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp.	4BZ6	
V2	2nd. Video IF Amp.	4BZ6	
V3	3rd. Video IF Amp. - Video Det	6AM8A	
V4	Video Output-Sync Sep.	6BH8	
V5	2-and IF Amp - Sync Amp	6U8A	
V6	Math. Det -AF Amp	6BN8	
V7	Audio Output	6AQ8A	
V8	Vert. Mult.-Vert. Output	13DE7	
V9	Horiz AFC-Horiz. Osc.	6CG7	
V10	Horiz Output	17DQ8A	
V11	Damper	17D4	
V12	HV Rect	1G3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No	SYLVANIA PART No.	
V13	21DHP4			21DHP4 ①	① "Silver Screen 65"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA					
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	18-70-8	PRR150V150	BR150J5	TC496	TD-150-150	MT-15150	TVA-1422
C2A	+200	300	18-68-8	AFH4-02-30	D0028	FP418.54	TMQ-118	Q-30 MTD-4520	TVL-4590
B	±20	300							
C	20	300							
D	+20	200							
C3A	80	300	18-75-8	PR4-480				Q-321.5	R27U9 *
B	100	100							
C	40	50							
C4	4	50	18-25-0	PRR150V4	BBR4-50	TT50X5	TD-4-50	MT-0504	TVA-1402

* Non-catalog item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	.1	400	18-104S8	P488N-1	DF-104	CUB4P1	GEM-4G1	4TM-P1	①
C6	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C7	27					CI0G27C			NPO 10%
C8	470		15-4711		MD-471				10%
C9	1000		15-1021?						10% ①
C10	680		15-6811		MD-681				10%
C11	5000		15-5021?	BPD-005	DD-502	BYA10D5	DC5J5	5HK-D5	
C12	1000		15-1021?						
C13	4.7		20-23-0	NPO-S1 4.7	TCZ-4R7	C10V47C	Z7-5547	5TCCB-Y47	10% ②
C14	5000		15-5021?	BPD-005	DD-502	BYA10D5	DC5J5	5HK-D5	③
C15	.047	400	16-47238						10%
C16	33								N150
C17	33								N150
C18	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	③
C19	047	400	16-47228	P488N-047	DF-503	BC584U	ACE8147	4SK-547	
C20	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C21	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	③
C22	2000		15-2021S	BPD-002	DD-203	BYA10D2	DC5J2	5HK-D2	
C23	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C24	10000		20-95-0	BPD-01	DD-103	BYA10S1	DC5J1	5HK-S1	③
C25	1000		15-1021S	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C26	5000		15-5021?	BPD-005	DD-502	BYA10D5	DC5J5	5HK-D5	
C27	5000	2000	20-79-0		DD30-502	HVC20D5		20HK-D5	
C28	01	600	16-10253				GEM-1S51		10%
C29	033	400	16-33343						10%
C30	01	600	16-10252				GEM-1S51		10%
C31	047	400	16-47247	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	③
C32	22	200	16-22423	P288N-22		CUB2P22	GEM-3G22	2TM-P22	
C33	350		15-3514						N750 10%
C34	01	400	20-19-1	P488N-01	DS-103	CUB4S1	GEM-4S1	4TM-S1	
C35	820		20-13-2	1469-00082		1R5T82		M5-382	5%
C36	1	400	16-10443	P488N-1	DF-104	CUB4P1	GEM-4G1	4TM-P1	
C37	1	400	16-10443	P488N-1	DF-104	CUB4P1	GEM-4G1	4TM-P1	
C38	035	600	16-33553						N1400 5% ③
C39	200	4000	15-20143S						
C40	047	600	16-47353	P688N-047		CUB6S47	GEM-6147	6TM-S47	
C41	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C42	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C43	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C44	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C45	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C46	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C47	10000		15-1031?	BPD-01	DD-103	BYA10S1	DC5J1	5HK-S1	
C48	10000		15-1031?	BPD-01	DD-103	BYA10S1	DC5J1	5HK-S1	
C49	1000		15-1021?	BPD-001	DD-102	BYA5D1	DC5J1	5HK-D1	
C50	047	600	16-47353	P688N-047		CUB6S47	GEM-6147	6TM-S47	

① Not used in Ch. 528.51220, 230.
② Ch. 528.51230, 230 use 10mmf in this application (Part #20-14-0).
③ Ch. 528.51230, 230 use .33mfd @ 100V in this application (Part #16-22418).
④ Not used in Ch. 528.51223, 223.
⑤ Ch. 528.51220, 230 use .02mfd in this application (Part #20-95-0).
⑥ Ch. 528.51230, 230 use .056mfd, 400V 10% in this application (Part #16-56347).
⑦ Nominal value. Replace with original value.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	1meg	;	34-236-0	B-70	A47-1meg-Z	Q33-137	TA48A	Volume, Note 1
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWK-13	T6-1	US-26	
R2A	1000Ω	;	34-130-1	F1-4			FB18L	Contrast, Note 2
B	Shaft			Not Req.			C6875	
R3A	3 4meg		34-159-1				TA56L	Brightness
B	6meg						Not Req.	Height
R4A	1meg		34-116-1					Vert. Hold
B	900Ω							Vert. Lin.
R5A	5meg		34-81-1	AB-5T †	B47-5meg-3T	Q31-141 †	PTA56L †	AGC with 1.5meg Stop
B	Shaft			AK-19	Not Req.	T49	Not Req.	

* Use KR-1 with CRL "red label" controls and KB-1 with "blue label" controls.
† Use a 1.5meg resistor in series with the right hand terminal of control viewed from shaft end, terminals down.
Note 1. Alternate 500K control may be used in some versions (Part #24-305-0).
Note 2. Alternate 500Ω control may be in used in some versions (Part #24-111-1).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R6	56000		60-56201	
R7	3300		60-33102	
R8	10000		60-10202	
R9	560		60-56001	
R10	15K		60-15301	
R11	10000		60-10202	
R12	3300		60-33102	
R13	560		60-56001	
R14	56K		60-56301	Note 1
R15	47000	1	60-47211	Note 2
R16	2200		60-22301	
R17	47000		60-47201	
R18	820K		60-82401	
R19	18meg		60-18601	Note 3
R20	2.2meg		60-22501	Note 3
R21	18meg		60-18601	Note 4
R22	1meg		60-10502	
R23	39000	4	61-3-1	
R24	390		60-39001	
R25	100K		60-10401	
R26	100K		60-10401	
R27	220000		60-22303	
R28	18K		60-18301	
R29	6.8meg		60-68502	Note 5
R30	220K		60-22402	
R31	470K		60-47401	

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R32	270Ω	1	60-27111	
R33	10meg		60-10501	
R34	820Ω		60-82201	
R35	470K		60-47402	
R36	820K		60-82401	
R37	2.2meg		60-22501	
R38	100K	1	60-10411	
R39	15000	2	60-15122	
R40	1000Ω		60-10201	
R41	2200Ω			Note 6
R42	2200Ω			Note 6
R43	82K	1	60-82311	
R44	120K	1	60-12411	
R45	8200Ω		60-82201	
R46	220K	1	60-22411	
R47	820Ω		60-82101	
R48	1800Ω		60-18211	
R49	2200Ω	1	60-22211	
R50	4700Ω		60-47202	
R51	1800Ω	4	61-4-1	
R52	1200Ω	15	61-123-0	
R53	220Ω	1	60-22112	
R54	390Ω	1	60-39111	
R55	120Ω	10	61-124-0	
R56	4.5Ω	10	61-115	

Note 1. Ch. 528.51220, 230 use 8200Ω in this application (Part #60-82201).
Note 2. Ch. 528.51220, 230 use 10000Ω in this application (Part #60-10202).
Note 3. Not used in Ch. 528.51220, 230.
Note 4. Ch. 528.51220, 230 use 4.7meg in this application (Part #60-47501).
Note 5. Ch. 528.51220, 230 use 2.2meg in this application (Part #60-22502).
Note 6. Nominal value. Replace with original value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rem PART No.	
L1A	1st. Video IF	10-82-2					
B	41.25MC Trap						
L2A	2nd. Video IF	10-16-3					
B	47.25MC Trap						
L3	3rd. Video IF	10-17-3					
L4	4th. Video IF	10-83-2					
L5	Resonant Choke	10-85-1					12 Microhenries
L6	Series Peaking Coil	10-84-1			TV-198	6110	90 Microhenries
L7A	1st. Sound IF	10-146-1					
B	4.5MC Trap						
L8	Series Peaking Coil	10-86-1	*19-3250	*TV-198	*6130	*VP-6	270 Microhenries, wound on 15K resistor
L9	Shunt Peaking Coil	10-85-1	19-3250	TV-198	6130	VP-6	270 Microhenries
L10	Ratio Detector	10-31-0					Tertiary 1.1ũ
L11	Fil. Choke	10-122-1	19-1002	RC-583	4606		2.3 Microhenries
L12	RF Choke	10-136-1	19-1003	SW-230	4608		2.65 Microhenries

* Parallel with 15K resistor

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rem. PART No.	Thordarson PART No.	
L13	52Ω *		10-13-5						Waveform Coil -44G * Tapped @ 22Ω

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA								NOTES
		SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	
T1	Vert. Output	B80-3-3C	Z1900 ①	A-3821 ②	V316 ③		A-8147 ②	26875 ①	A-118X	
	Alt. Vert. Output	60-3-2						Y-53 ④		
T2	Yoke-Horiz. (12MH) (110°)-Vert (24MH)	D80-7-4H ①								
	Alt. Yoke	80-7-4								
	Yoke Clamp	22-116-3								
	Alt. Yoke Clamp	22-107-3								
T3	Horiz. Output	80-4-3F								
	Alt. Horiz. Output									

① Connect as autoformer. Use 6 : 1 turns ratio.
② Drill new mounting hole(s).
③ Includes yoke plug.
④ Replace original rear cover, centering device, width device, remove capacitor across yoke terminals #2 and #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Rem PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	8200Ω	3-4Ω	80-21-1	Z1110	A-3026		A-3877①	24S65	S-8X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP	SILVERTONE PART No	QUAM PART No	
SP1	5"	PM	3-4Ω	33-258-4	5AIR	

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	SILVERTONE PART No	REPLACEMENT DATA
K1	Sound IF Screen Circuit	4700mmf, 5%	13-2-3	
K2	Audio Circuit	250mmf 10%, 1000mmf, 5000mmf, 220Ω, 270Ω, 3300Ω, 22K, 470K	13-11-5	
K3	Sync Coupling	150mmf 10% N1500, 5000mmf, 22K, 470K, 2.2meg	13-9-5	
K4	Vert. Circuit	2200mmf, 2200mmf, 4700mmf, 1000mmf, 6800Ω, 22K, 33K, 47K, 47K, 68K	13-20-5	
K5	Horiz. Circuit	47mmf 10%, 220mmf 10%, 4700mmf, 4700mmf, 10000mmf, 10000mmf, 6200Ω, 23.5K, 23.5K 150K, 680K, 1meg	13-19-5	
K6	Interlock Bracket Isolator	1000mmf, @ 1000VAC, 4.7meg	13-17-3	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT (Measured)	SILVERTONE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.		
M1	.385A	53-880 ①	1241AH ①	1N100T ②	TV60 ③ TV50 ③	350A ① 40K ①	① Selenium Type. ② Germanium Type. ③ Silicon Type.
M2	.385A	53-880 ①	1241AH ①	1N100T ③	TV60 ③ TV500 ③	350A ① 40K ①	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuner	95-133-0	VHF, Ch. 528.51220, 222, 223
	Tuner	95-158-0	UHF-VHF, Includes VHF with UHF provisions Tuner #95-180-0 and UHF Tuner #95-159-0. Ch. 528.51330, 331, 332
M4	Width Device	53-1204	
M5	Magnet	27-70-3	Beam Alignment
M6	Circuit Breaker	43-2-2	
	Printed Board	84-5778	Video IF, Sync, Sound (Less Tubes) Ch. 528.51223, 223, 231, 232
	Printed Board	84-4797	Video IF, Sync, Sound (Less Tubes) Ch. 528.51230, 230
	Printed Board	84-4798	Horiz.,Vert. (Less Tubes)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

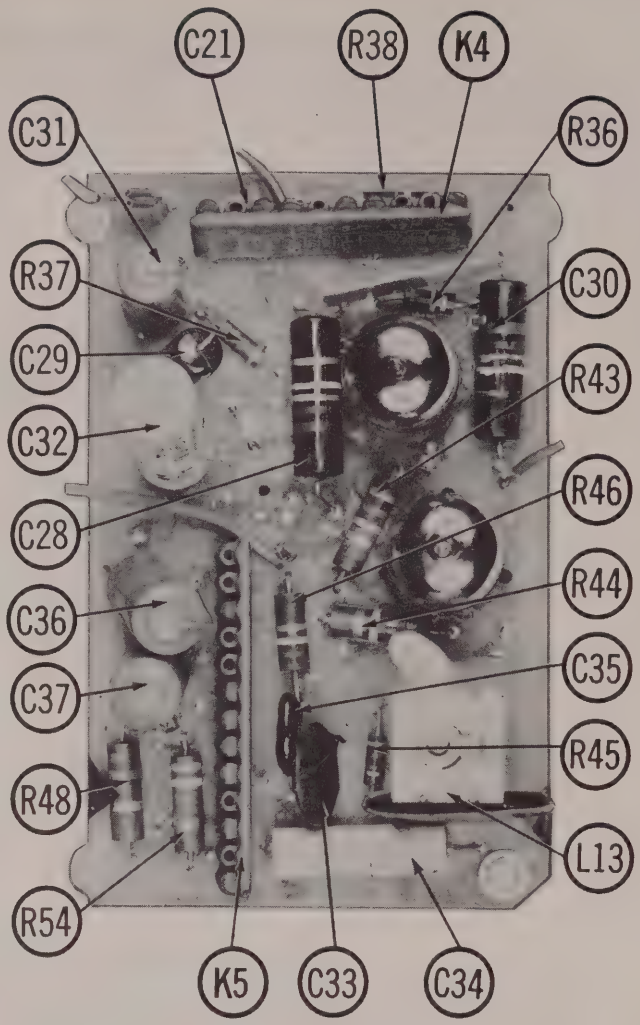
NAME	PART NO.	DESCRIPTION
Safety Glass	46-144-0	
Mask	40-12-5	
Knob	52-107-0	Fine Tuning, Model 918
Knob	52-886-0	VHF Fine Tuning, Model 919
Knob	52-886-0	UHF Fine Tuning, Model 919
Knob	52-1020-0	Channel Selector, Model 918
Knob	52-1021-0	VHF Channel Selector, Model 919
Knob	52-1019-0	UHF Dial Indicator, Model 919
Knob	52-1018-0	On-Off-Volume
Knob	52-1016-0	3 used
Handle	49-261	
Handle Cover	49-249	
Cabinet	43-53-0	

WIRING DATA

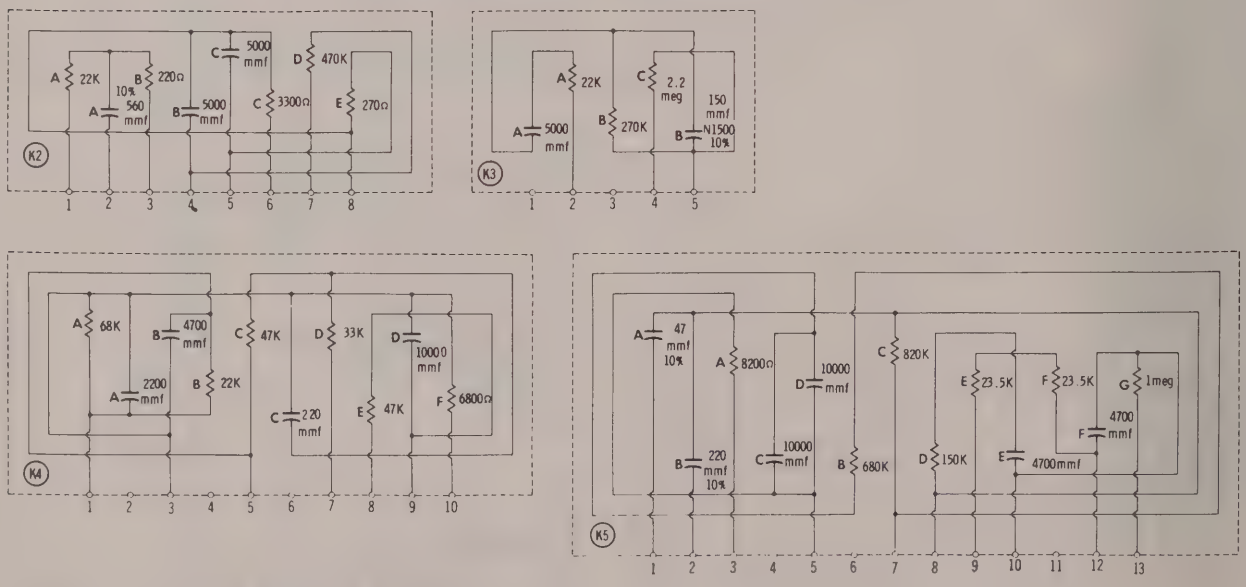
High Voltage Lead	Use BELDEN No. 8889
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

SILVERTONE MODELS 918, 919 (Ch. 528.51220, 222, 223, 230, 231, 232)

FOLDER 3



HORIZ & VERT PRINTED BOARD



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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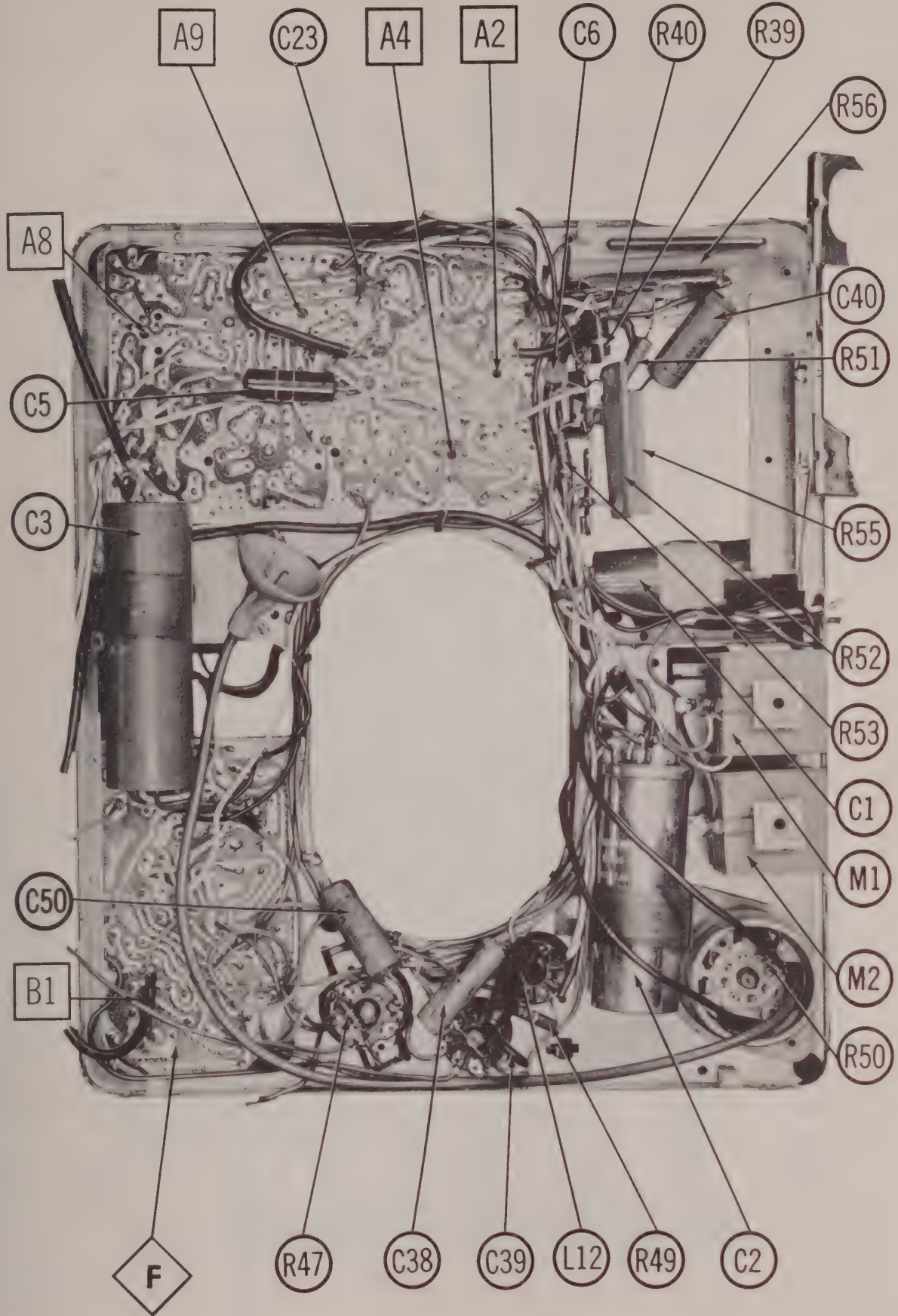
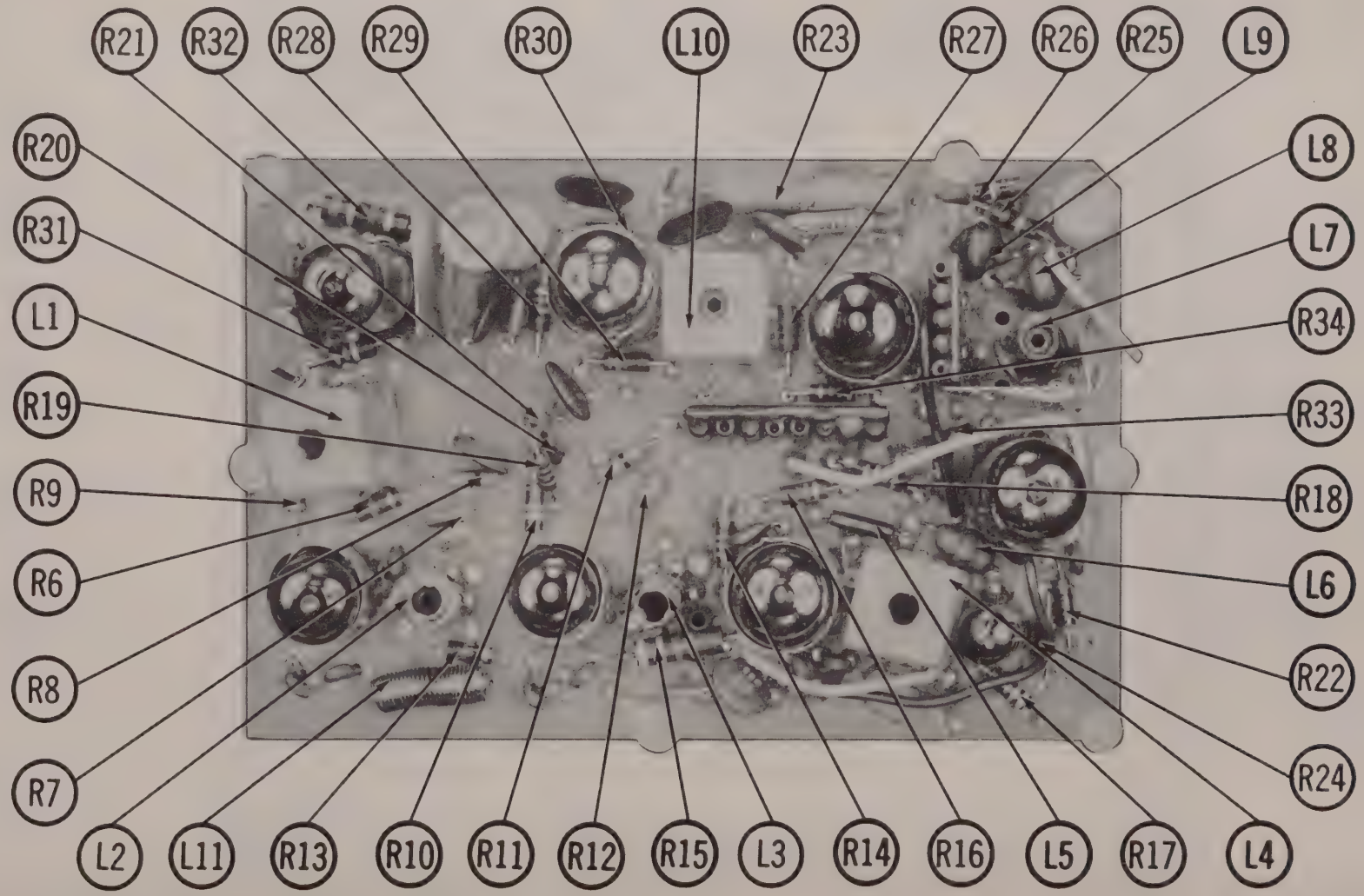
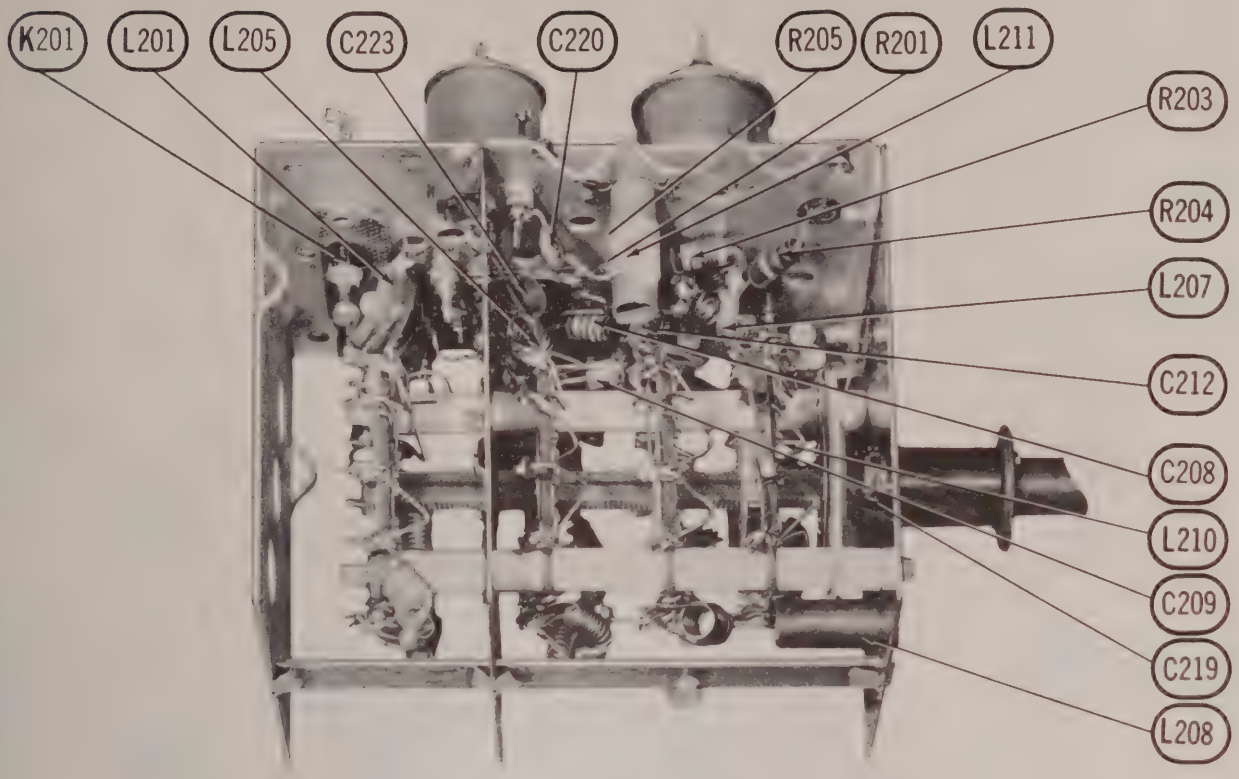
COMPONENT COMBINATION LAYOUT



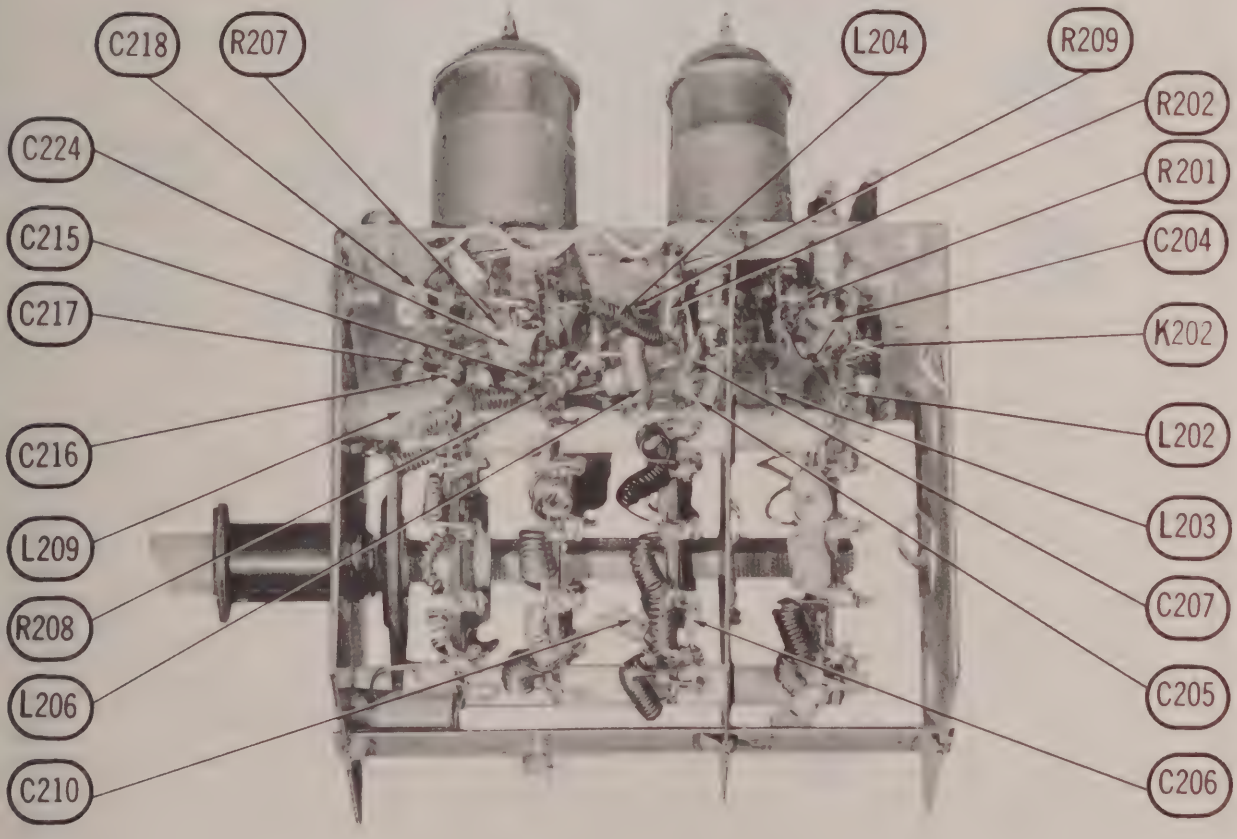
CHASSIS BOTTOM VIEW



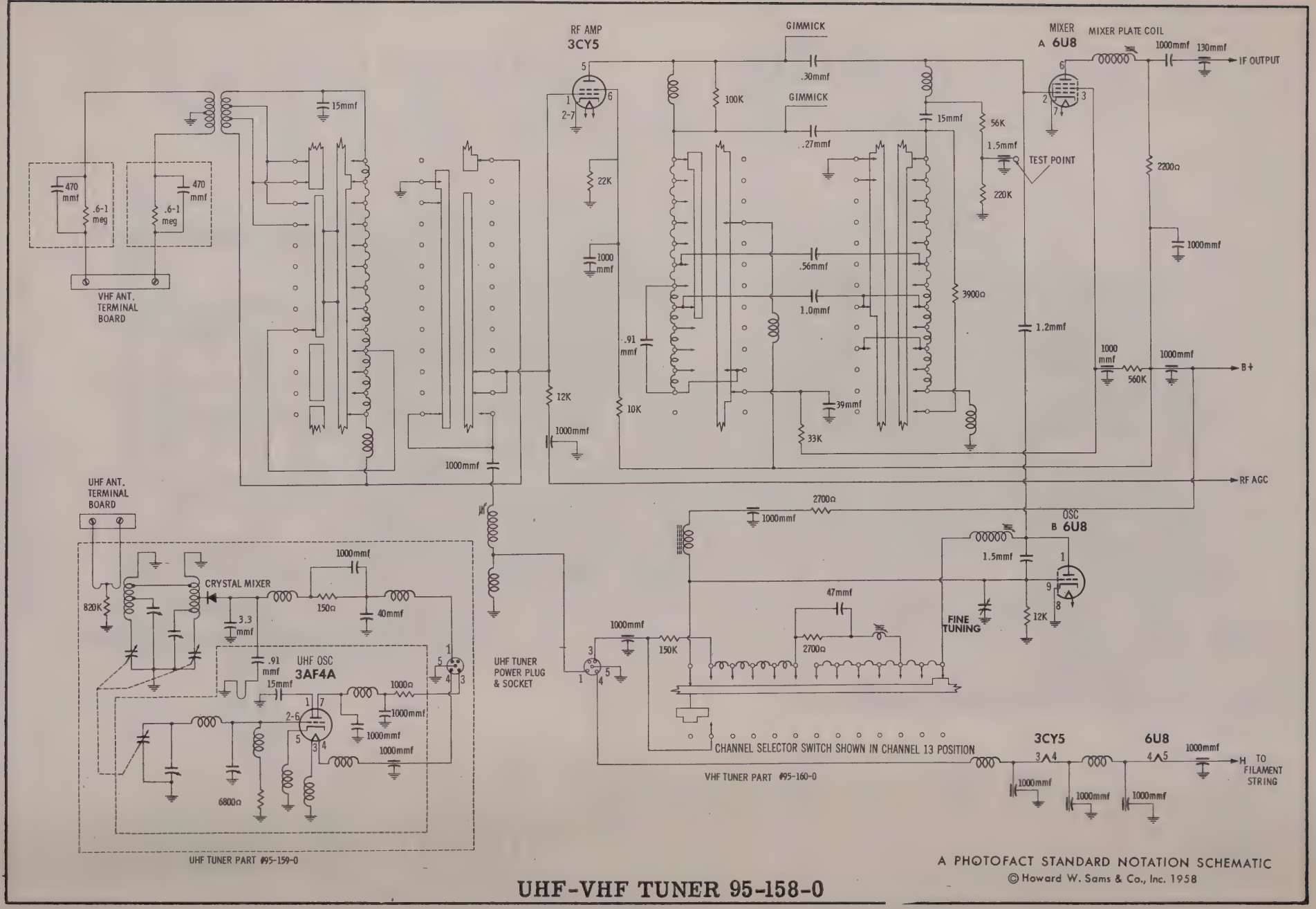
VIDEO IF, SYNC & SOUND PRINTED BOARD - "R" & "L" IDENT



TUNER 95-133-0 - LEFT SIDE



TUNER 95-133-0 - RIGHT SIDE



UHF-VHF TUNER 95-158-0

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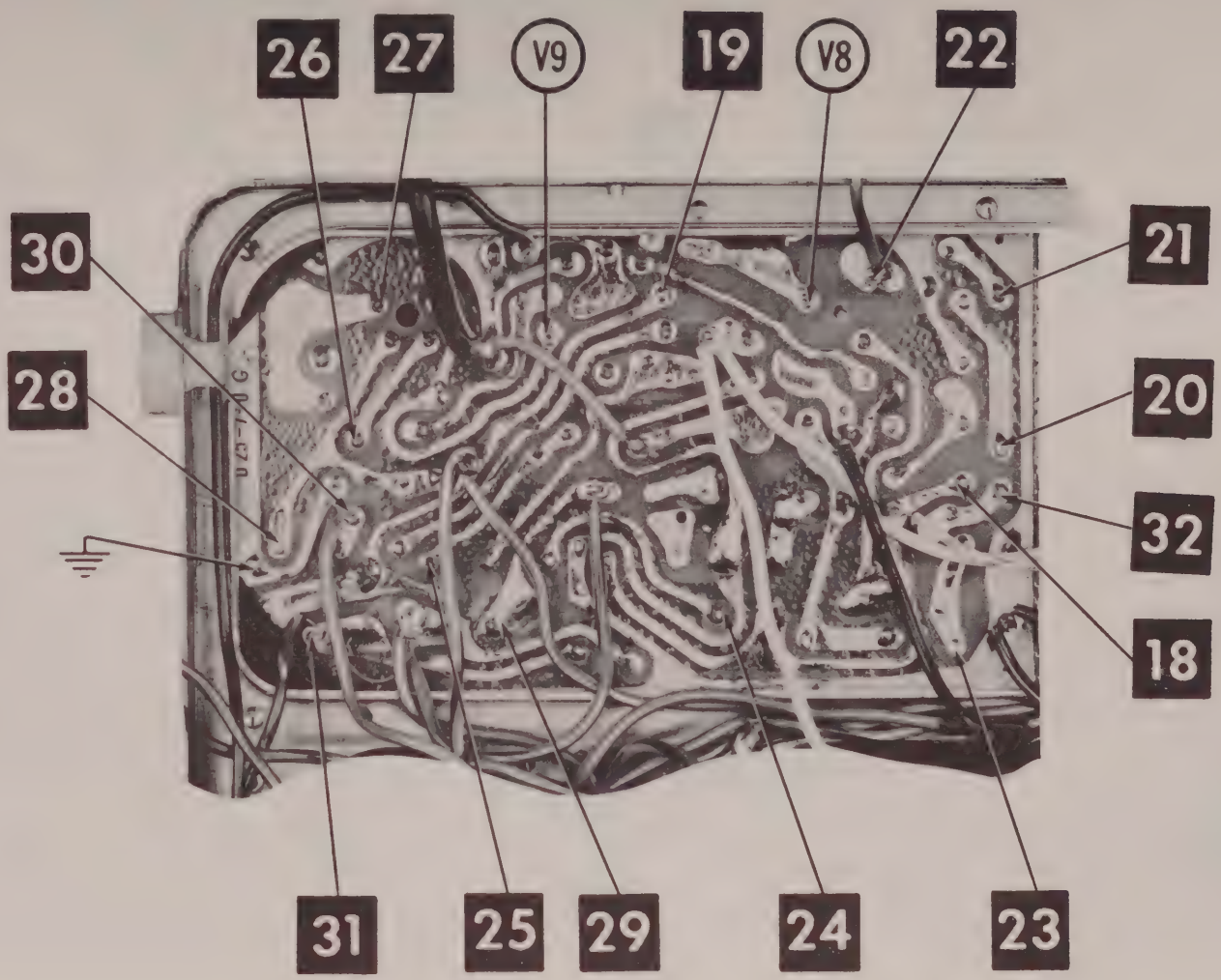


A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

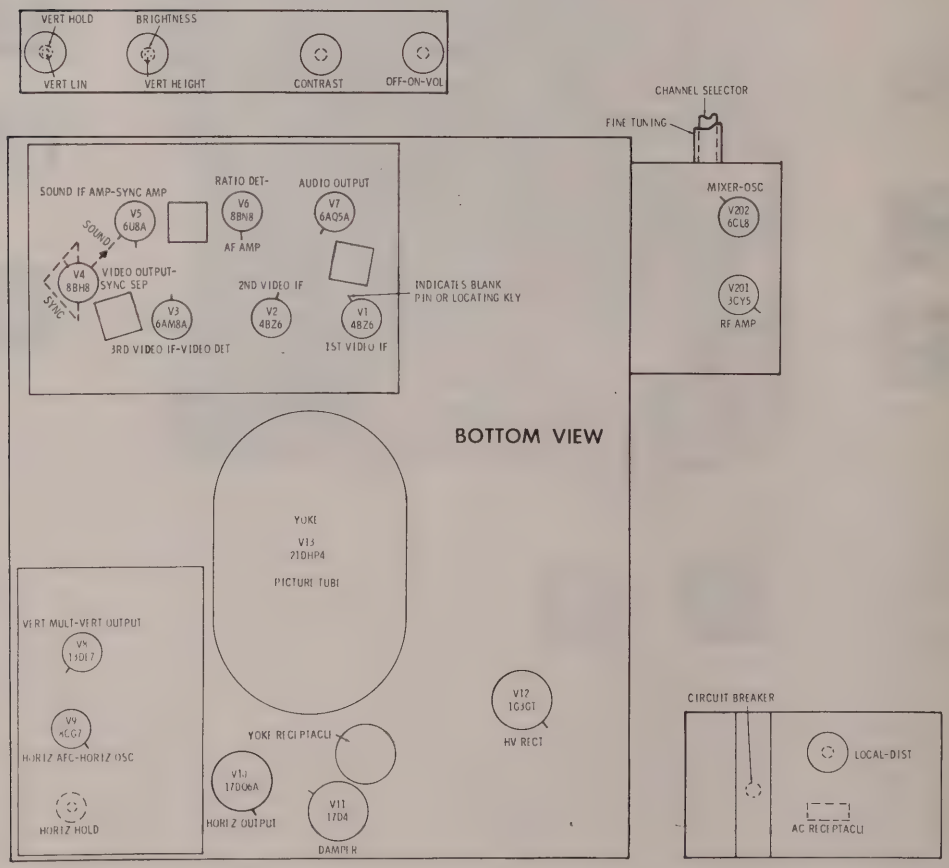
HORIZ & SWEEP PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

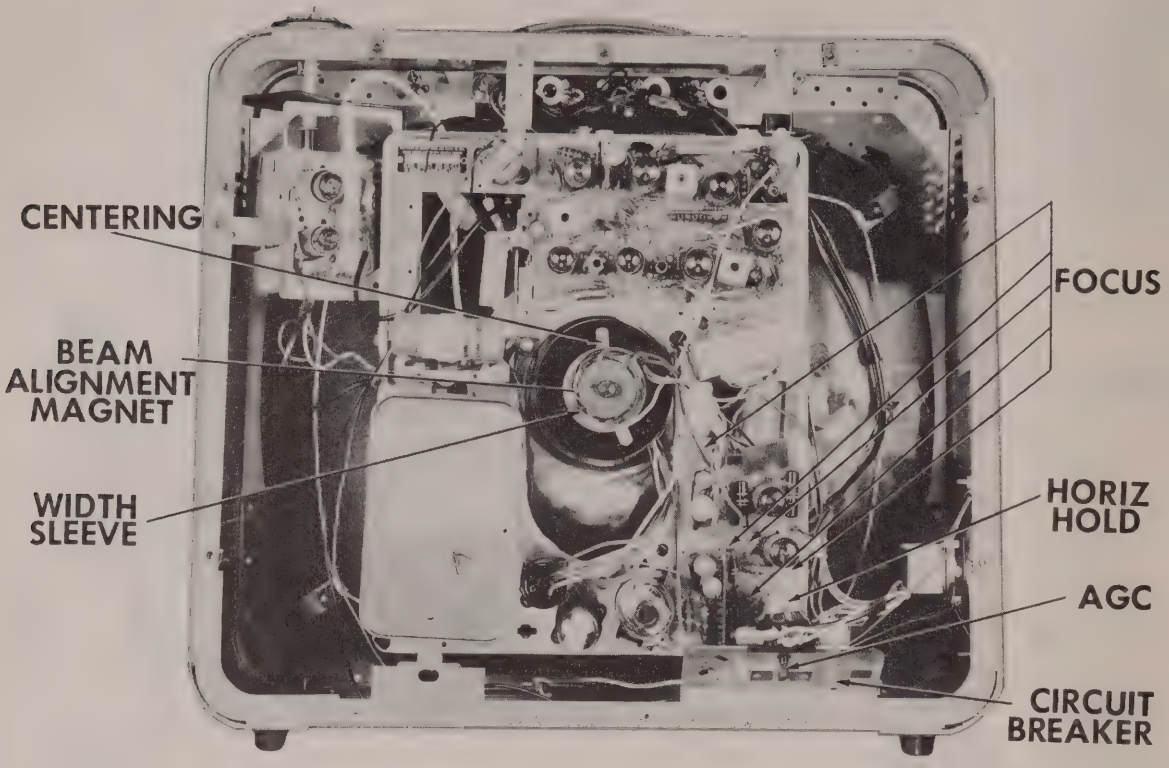
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BZ6	700K	56Ω	2.5Ω	4Ω	†2700Ω	†2700Ω	0Ω		
V2	4BZ6	700K	56Ω	4Ω	5.5Ω	†1700Ω	†1700Ω	0Ω		
V3	6AM8A	220Ω	.1Ω	†5100Ω	5.5Ω	7Ω	†5100Ω	.1Ω	4700Ω	0Ω
V4	6BH8	0Ω	1.9meg	†470K	9.5Ω	7Ω	• 190Ω	1meg	†1300Ω	†4400Ω
V5	6U8A	†9500Ω	4Ω	†70K	9.5Ω	11.5Ω	†3500Ω	270Ω	3300Ω	†470K
V6	8BN8	1meg	0Ω	1meg	11.5Ω	14Ω	18K	†220K	6.8meg	0Ω
V7	6AQ5A	470K	270Ω	14Ω	16Ω	†2100Ω	†1800Ω	470K		
V8	13DE7	†490Ω	2.2meg	2.2meg	20Ω	17Ω	• ‡3meg	• 950K	0Ω	• 850Ω
V9	8CG7	†47K	800K	0Ω	23Ω	20Ω	†510Ω	1.5meg	750K	NC
V10	17DQ6A	TP	32Ω	TP	†3100Ω	1meg	NC	27Ω	0Ω	TOP CAP ‡19Ω
V11	17D4	TP	NC	¶220K	NC	†120Ω	NC	23Ω	27Ω	
V12	1G3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡384Ω
V13	21DHP4	16Ω	54K	‡30Ω	0Ω	NC	NC	•270K	17Ω	
V201	3CY5	1.4meg	0Ω	2.5Ω	1.5Ω	†1300Ω	†8000Ω	0Ω		
V202	6CL8	15K	†13K	0Ω	0Ω	1.5Ω	†3500Ω	†13K	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 265V SOURCE. NC NO CONNECTION.
‡ MEASURED FROM PIN 3 OF V11. TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station and adjust the Horizontal Hold until the picture synchronizes horizontally. If the picture cannot be synced with the Horizontal Hold, turn the Waveform slug (B1) several turns out of the coil form from its original position. Readjust the Horizontal Hold until the picture synchronizes horizontally.

Connect the vertical amplifier of a scope thru a low capacity probe to point (F). Connect low side to chassis. Retouch the Horizontal Hold to synchronize the picture.

Adjust the Waveform slug (B1) for a waveform similar to Fig. 2 with the sharp peak approximately 10% higher than the broad peak. Keep the picture in sync during this adjustment with the Horizontal Hold. Remove scope connection and retouch Horizontal Hold, if necessary, to synchronize the picture horizontally.

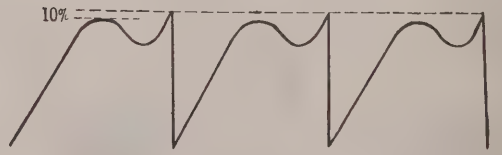


FIG. 2

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FIRESTONE
MODEL 4-C-35 (Code 1-7-W100)

FIRESTONE
MODEL 4-C-35 (Code 1-7-W100)

TRADE NAME	Firestone Model 4-C-35 (Code 1-7-W100)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Three Power Portable BC-SW Receiver
TUBES (Five)	Types 1U4 RF Amplifier, 1L6 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-125 Volts AC-DC (or) 7.5 Volts "A" Supply & 90 Volts "B" Supply in Pack Form
RATING	.16 Amp. @ 117 Volts AC (or) 46MA @ 7.5 Volts DC & 14MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC SHORT WAVE 5.8 - 18.3 MC

FIRESTONE
MODEL 4-C-35 (Code 1-7-W100)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 6 (grid) of 1L6 (V2). Low side to B-.	455KC (400~ Mod)	BC	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200mmf to reduce hum modulation.
	Set signal generator to 19.3MC for image frequency. If image fails to appear, set signal generator to 18.4MC. Decrease capacity of A5 until signal appears. Recheck for image.							
2.	.1mfd	High side to pin 6 (grid) of 1L6 (V2). Low side to B-.	18.4MC	SW	Tuning gang fully open	Across voice coil	A5	Set A6 and A7 to maximum capacity. Adjust A5 for maximum output using peak signal obtained with screw farthest out.
3.		Loop	17MC	"	17MC	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1620KC	BC	Tuning gang fully open	"	A8	"
5.		"	1400KC	"	1400KC	"	A9, A10	"
6.		"	600KC	"	600KC	"	All	Fashion loop of several turns of wire and radiate signal into loop of receiver while rocking tuning gang. Repeat steps 4, 5 and 6.

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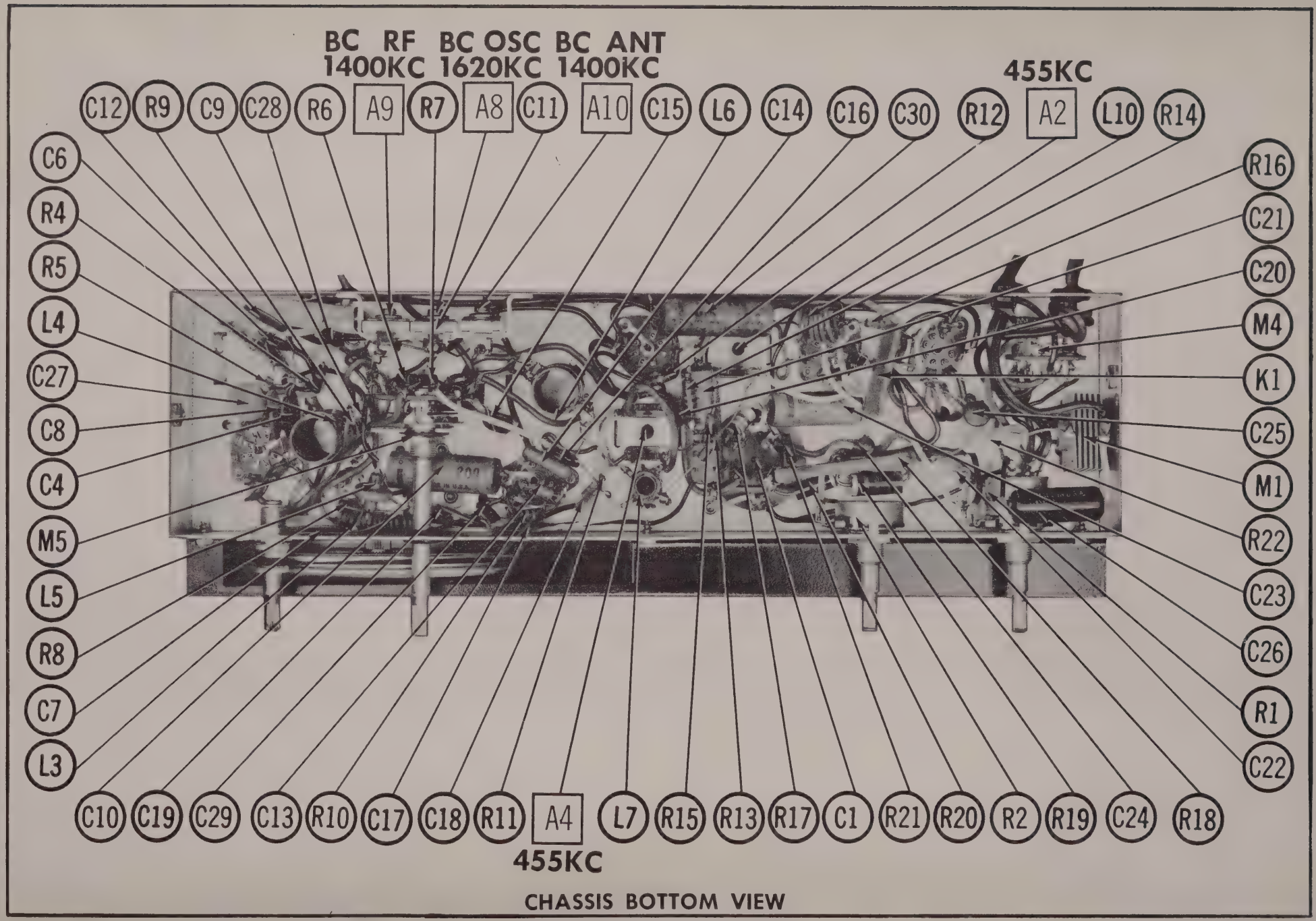


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp.	1U4	
V2	Converter	1L6	
V3	IF Amp.	1U4	

ITEM No.	USE	TYPE	NOTES
V4	Det.-AVC-AF Amp.	1U5	
V5	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲50	150	584005	AFH4-38	D0330	FP412.2 TT15X20	TMQ-37	Q-125	TVL-4425.3
B	■40	150							
C	▲40	150							
D	100	15							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

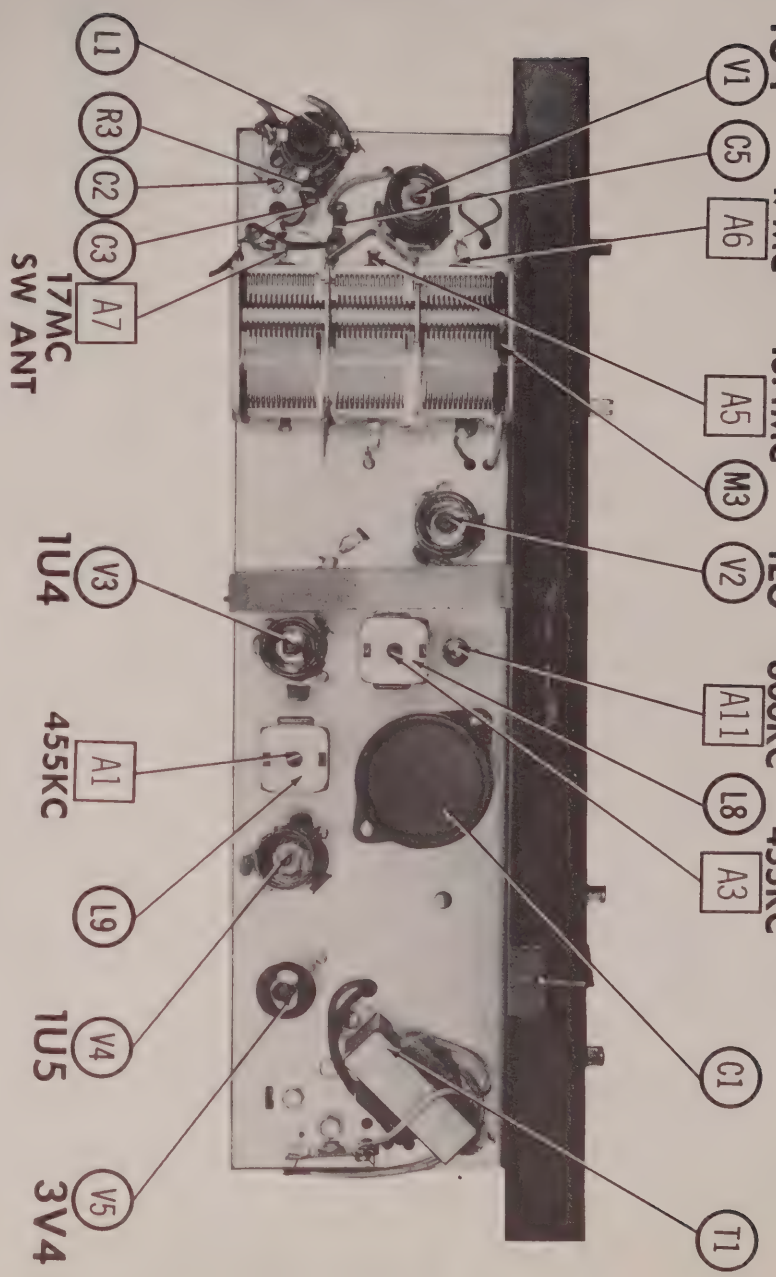
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	3.3		515026	NPO-SI 3.3	TCZ-3R3	CTA6V33C	ZT-5533	5TCCB-V33	
C3	6.8		515023	NPO-SI 6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	
C4	10000		551035	BPD-01	DD-103	BYA6SI	DC511	5HK-SI	
C5	100		515021	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C6	2200		515027	DI-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C7	10000		551035	BPD-01	DD-103	BYA6SI	DC511	5HK-SI	
C8	10000		551035	BPD-01	DD-103	BYA6SI	DC511	5HK-SI	
C9	6.8		515023	NPO-SI 6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	
C10	.1	200	515029	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C11A									
B			515024						
C									
C12	10000		551035	BPD-01	DD-103	BYA6SI	DC511	5HK-SI	
C13	.33		515020						
C14	50		515022	SI 50	D6-500	LT6Q5	GP-545	5GA-Q5	
C15	4000		570000				MCE463		2%
C16	575		570001						5%
C17	10000		551035	BPD-01	DD-103	BYA6SI	DC511	5HK-SI	
C18	5000		555025	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C19	10000		551035	BPD-01	DD-103	BYA6SI	DC511	5HK-SI	
C20	2200		515027	DI-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C21	.1	200	515029	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C22	100		515021	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C23	.05	200	515030	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C24	1000		515035	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C25	2200		515027	DI-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C26	.05	400	515028	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C27	5000		555025	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C28	2200		515027	DI-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C29	2200		515027	DI-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C30	.1	200	515029	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	361082	B-70	A47-1meg-Z	QI3-137	U53	Volume, with 150K stop
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-2 or KR-2*	SWE-20	76-2	US-27	
R2A	2meg	½	361100	B-76	A47-2meg-Z	QI3-139	U55	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Use KR with CRL "red label" controls and KB with "blue label" controls.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FIRESTONE PART No.	NOTES
R3	47K		484732	
R4	2.7meg		482751	
R5	3.9meg			Note 1
R6	27K		482731	
R7	1000Ω		481021	
R8	1000Ω		481021	
R9	47K		484732	
R10	180K		481841	
R11	68K		486831	
R12	200Ω			Note 2
R13	1meg		481051	
R14	6.8meg		486851	
R15	1500Ω		481521	
R16	1500Ω		481521	
R17	1800Ω		481821	
R18	3300Ω	3(WW)	510022	
R19	4700Ω	2	484727	
R20	470Ω	1	484714	
R21	82Ω		488201	
R22	100Ω	2.5 (WW)	510023	Fuse type

Note 1. Some versions may use 3.3meg in this application. (Part #483351).
Note 2. Some versions may use 220Ω in this application. (Paart #482211).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA FIRESTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	SW Ant. Coil	455070					
L2	Loop Ant.	460032					Includes cabinet back
L3	Fil. Choke	474612	19-1007	BC-561	4602		1 Microhenry
L4	SW RF Coil	455068					
L5	BC RF Coil	455065	19-4201	TV-197	6154	VP-5	190 Microhenries
L6	SW Osc. Coil	455022					
L7	BC Osc. Coil	455066	14-1077	BC-393 *	69-OSC *		
L8	Input IF	450001	16-6758	BC-352	12-C7	RF-1	
L9	Output IF	450003	16-6758	BC-353	12-C8	RF-2	
L10	RF Choke	474611	19-3001	TV-189	6175	VP-9	.8 Microhenry

* Disregard capacity winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	9500Ω	1-2Ω	430460	Z1000	A-2900	AU-608	A-3848	24S60	S-51X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	404003	4A07	Parallel and phase
SP2	4"	PM	3-4Ω	404003	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FIRESTONE PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	2000mmf, 150mmf, 10000mmf, 150mmf, 5000mmf, 10meg, 4.7meg, 1meg, 3.3meg	420007	Aerovox Centralab Sprague	PA-521 PC-165 DP-1

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FIRESTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.06A	380016	1234AH	RS075	75 M150 ①	① Silicon Type.

BATTERIES

ITEM No.	VOLTAGE	FIRESTONE PART No.	REPLACEMENT DATA BURGESS "A-B" Pack	EVEREADY "A-B" Pack	MALLORY "A-B" Pack	NOTES
M2	7.5V "A" 90V "B"	4-D-138	T6Z60	756	M-405	

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Tuning Cap.	590048	3 Gang (Ant. 15-465mmf, RF 15-465mmf, Osc. 15-465mmf)
M4	Switch	370041	AC-DC Battery, Rotary wafer type
M5	Switch	370040	Band, Rotary wafer type

CABINETS & CABINET PARTS

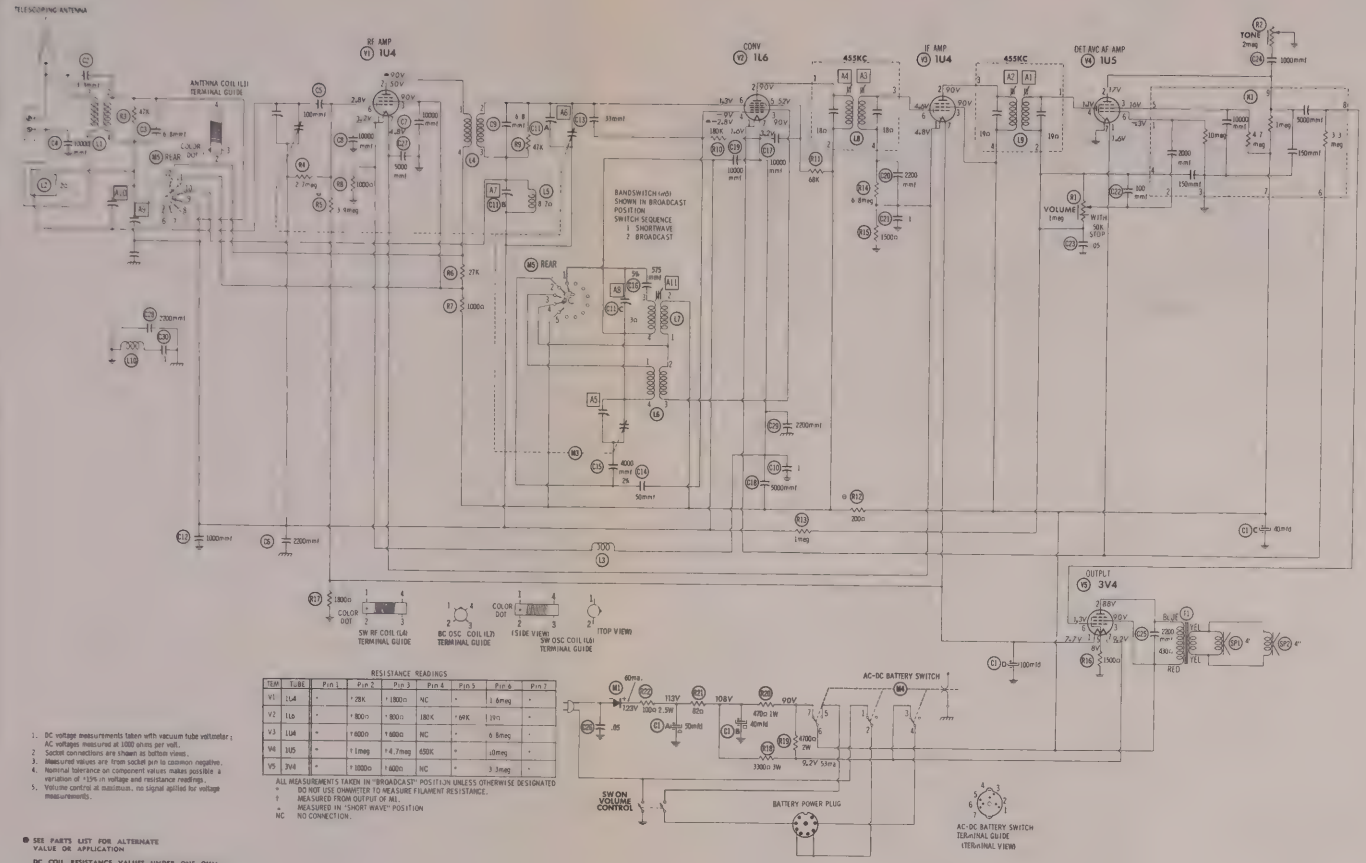
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	270150	4 Used
Case	230920	
Dial Window	260053	
Dial Pointer	674038	
Dial Pan	760882	
Antenna	464025	Telescoping

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1L4	-	*.28K	*1800Ω	NC	-	1.6meg	-
V2	1L6	-	*800Ω	*800Ω	180K	*69K	190	-
V3	1U4	*	†600Ω	†600Ω	NC	*	6.8meg	-
V4	1U5	*	†1meg	*4.7meg	450K	*	.10meg	-
V5	3V4	*	†1000Ω	†600Ω	NC	*	3.3meg	-

ALL MEASUREMENTS TAKEN IN "BROADCAST" POSITION UNLESS OTHERWISE DESIGNATED
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
- MEASURED IN "SHORT WAVE" POSITION
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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with CIRCUITRACE*
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GENERAL ELECTRIC MODELS P15A, P715A, B, C, P716A, B, P765A, B, P766A, B

GENERAL ELECTRIC MODELS P15A, P715A, B, C, P716A, B, P765A, B, P766A, B

MODEL P766A

TRADE NAME	General Electric Models P715A, P715B, P716A, P716B, P765A, P765B, P766A, P766B; Charger Unit P15A, P715C
MANUFACTURER	General Electric Co., Products Service, Radio Receiver Dept., 869 Broad St., Utica, N. Y.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	3 Volts DC
RATING	21MA @ 3 Volts DC
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1620KC	"	"	A4	"
3.		"	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.
4.		"	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DISASSEMBLY

1. Remove cap from speaker end of cabinet. Unsolder wire from chassis bracket.
2. Straighten metal tab holding speaker grille.
3. Remove speaker grille.
4. Disconnect speaker and remove.
5. Remove volume knob.
6. Remove tuning dial screw and tuning knob.
7. Remove screw near tuning shaft.
8. Remove screw from cap on tuning end of cabinet.
9. Slide chassis about $\frac{1}{2}$" toward tuning end of cabinet.
10. Unsolder 3 connections from loop. Observe color coding.
11. Continue sliding chassis from cabinet.

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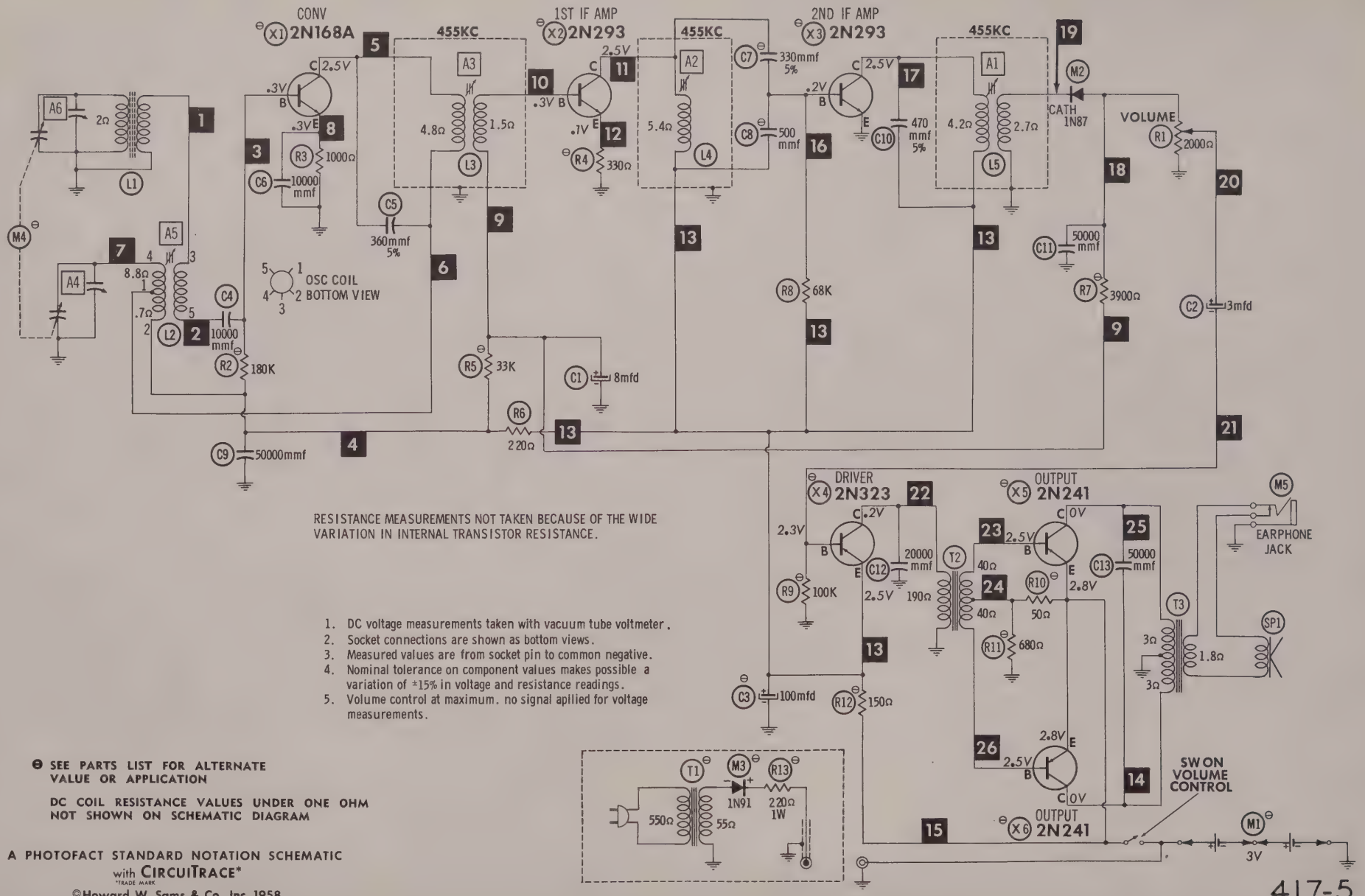

RESISTANCE MEASUREMENTS NOT TAKEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE*
*TRADE MARK

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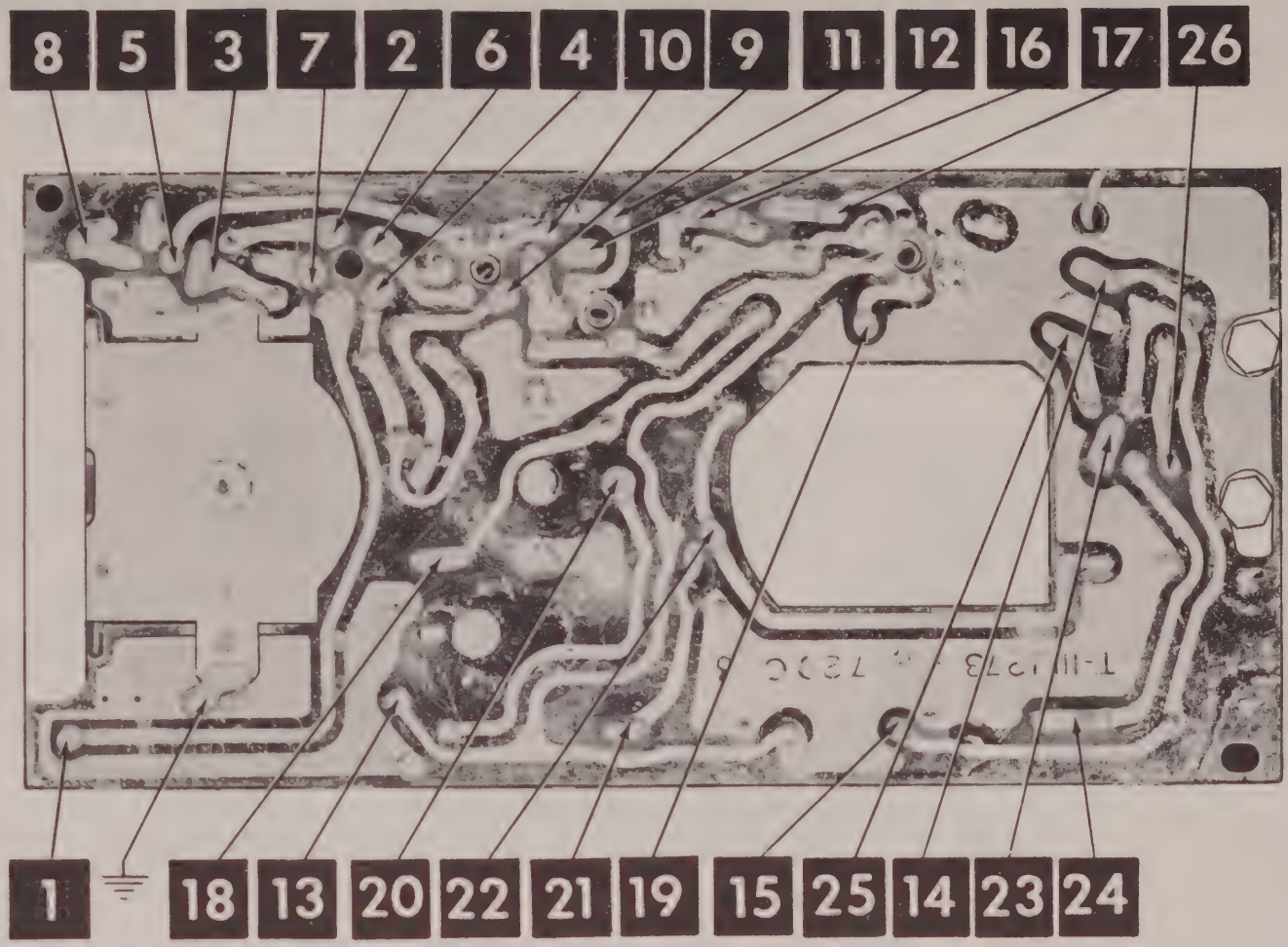

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PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N168A	Conv.	2N439			2N212	NPN Note 1
X2	2N293	1st IF	2N439			2N94	NPN Note 2
X3	2N293	2nd IF	2N439			2N94	NPN Note 3
X4	2N323	Driver		2N408	2N362	2N270	PNP Notes 4, 5
X5	2N241	Output	2N180	2N408	2N632	2N217	PNP Notes 5, 6
X6	2N241	Output	2N180	2N408	2N632	2N217	PNP Notes 5, 6

Note 1. Alternate type 2N164A.
Note 2. Alternate type 2N314. Models P715 & P716 use type 2N169, 2N292 or 2N313.
Note 3. Alternate type 2N314. Models P715 & P716 use type 2N165 or 2N169.
Note 4. Alternate type 2N191. Models P715 & P716 use type 2N191, 2N192 or 2N324.
Note 5. Models P715B, P716B use type 2N217.
Note 6. Models P715, P716 use type 2N241 or 2N321.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	8	3		PWE3008	NL8-6	TT6X8	ML8-6		TE-1086
C2	3	3		PWE3003	NL3-6	TT6X2	ML4-6		TE-1082
C3	100	3	①	PWE3100	NL100-6	TT6X100	ML100-3		TE-1102

① Models P715 & P716 use 50mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	10000			BPD-01	DD-103	BYA6S1	DC511	BL-S10	
C5	360			1469-00036		5R5T36		MS336	5%
C6	10000			BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C7	330			1469-00033		5R5T33		MS333	5% ①
C8	500			BPD-0005	DD-501	L10T5	UC-535	5GA-T5	②
C9	50000			BPD-05				TG-S50	
C10	470			1464-00047		5R5T47		MS347	5%
C11	50000			BPD-05				TG-S50	
C12	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C13	50000			BPD-05				TG-S50	

① Models P715, B, P716, B use 200mmf in this application.
② Models P715, B, P716, B use 1000mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2000Ω	1/4	RRC-420					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R2	180K			①
R3	1000Ω			
R4	330Ω			②
R5	33K			③
R6	220Ω			
R7	3900Ω			④

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R8	68K			
R9	100K			⑤
R10	50Ω		RS-1355	⑥
R11	680Ω			⑦
R12	150Ω			⑧
R13	220Ω	1		⑨

① Models P715, P716 use 150K in this application.
② Some versions use 270Ω in this application. Models P715, P716 use 1000Ω in this application.
③ Models P715, P716 use 120K in this application.
④ Models P715, P716 use 4700Ω in this application.
⑤ Models P715, P716 use 220K in this application. Models P715B, P716B use 68K in this application.
⑥ Models P715, P716 use 120Ω in this application. Models P715B, P716B use 68Ω in this application.
⑦ Models P715, P716 use 1800Ω in this application. Models P715B, P716B use 1000Ω in this application.
⑧ Models P715, P716B use 100Ω in this application.
⑨ Not used in early versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		G. E. PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	RLL-072					
L2	Osc. Coil	RLC-147					
L3	1st IF	RS-1334					
L4	2nd IF	RS-1333					
L5	3rd IF	RTL-213					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .05A	11V ② .012A		RTC-006 ①						

① Early versions used a 2.7V secondary and omitted R13.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1.7Ω	: 1	RTL-210			TA-28	TR-4		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	112Ω CT	18Ω	RTO-206							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP1	2 3/4"	PM	18Ω	RS-1039		

BATTERIES

ITEM No.	VOLTAGE	G. E. PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	3V			Z ①		915 ①		M-15R ①	① Two used

Two type AA Nickel Cadmium Rechargeable Cells used in Charger Unit.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		G. E. PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N87		1N60	1N60	Detector (Pigtail)
M3	1N91 *			SR-200	Charger Rect. (Pigtail)

* Some versions may use 1N92 in this application.

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M4	Tuning Cap.	RS-1434	2 Gang (Ant. 9-134mmf, Osc. 13-88mmf) Models P765A,
	Tuning Cap.	RS-1361	2 Gang, Models P765B, P766B P766A
M5	Jack	RJS-230	Earphone
	Printed Board	T-111J273	

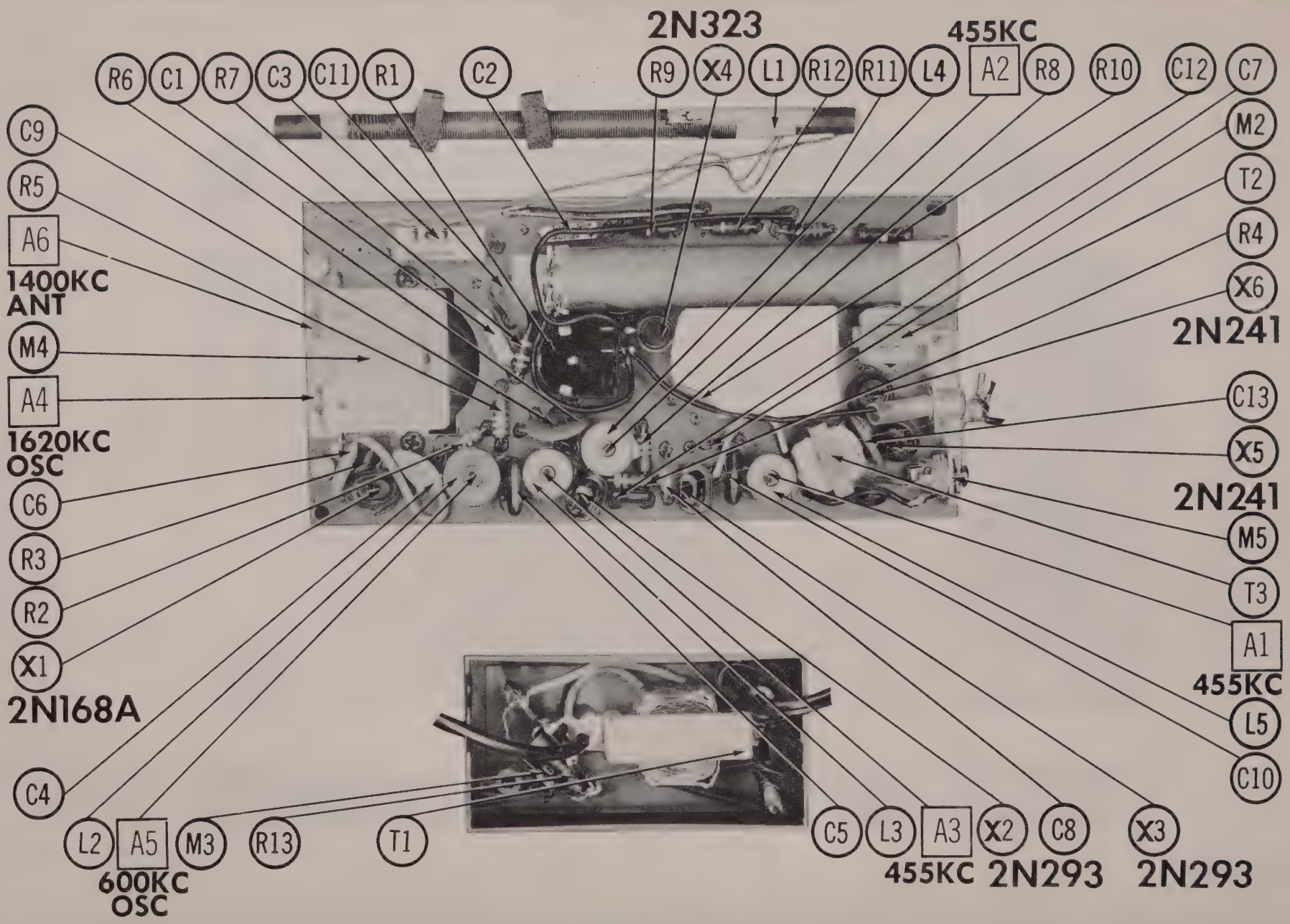
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	RS-1358	Tuning
Knob	RDK-636	On-Off-Volume
Cabinet	RAV-1041	Models P766A, B
Cabinet	RAV-1040	Models P765A, B

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



CHASSIS TOP VIEW

PHOTOFACT* Folder
*TRADE MARK

KNIGHT
MODEL KN-410 (92SX408)

KNIGHT
MODEL KN-410 (92SX408)

TRADE NAME	Knight Model KN-410 (92SX408)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated TV Sound Tuner
TUBES (Six)	Types 6CY5 RF Amplifier, 6CL8 Mixer-Oscillator, 6CB6 1st. IF Amplifier, 6CB6 2nd. IF Amplifier, 6AL5 Ratio Detector, 6X4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .3 Amp. @ 117 Volts AC (29 Watts)
TUNING RANGE	VHF Channels 2 thru 13

KNIGHT
MODEL KN-410 (92SX408)

ALIGNMENT INSTRUCTIONS

OSCILLATOR ALIGNMENT

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. One slug for HIGH band adjustment is located at 4 o'clock, and should be adjusted first. The LOW band adjustment is located at 9 o'clock. Adjust for best sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.001mfd	High side to point Ⓐ. Low side to chassis.	21.9MC	Any non-interfering channel	DC probe to point Ⓑ. Common to chassis. Use negative scale.	A1, A2, A3	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A4	Increase generator output. Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

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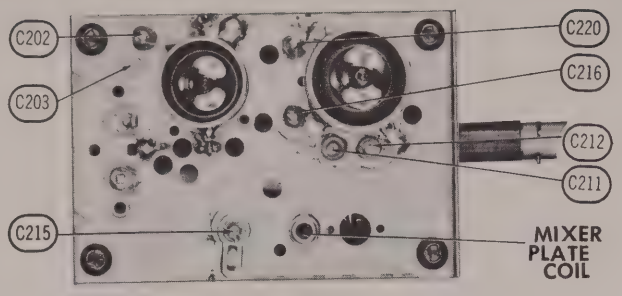
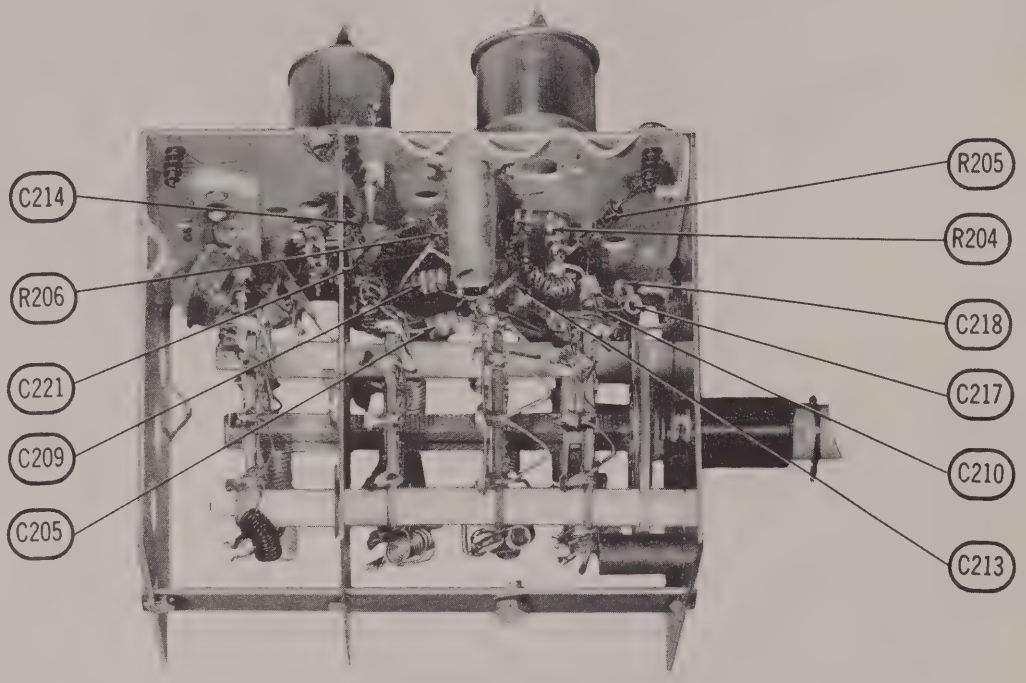
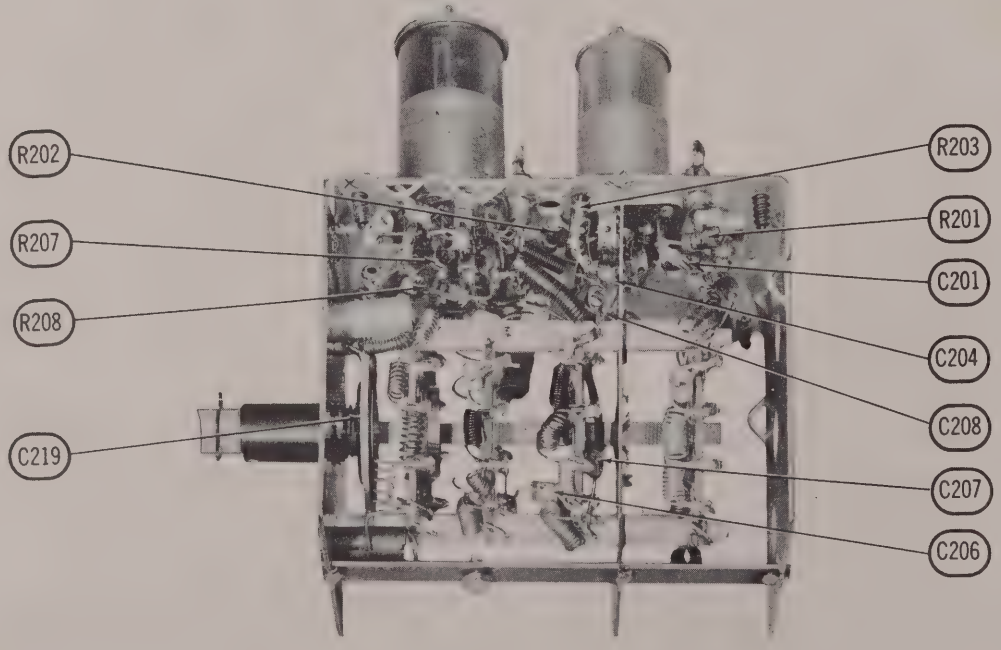
H539

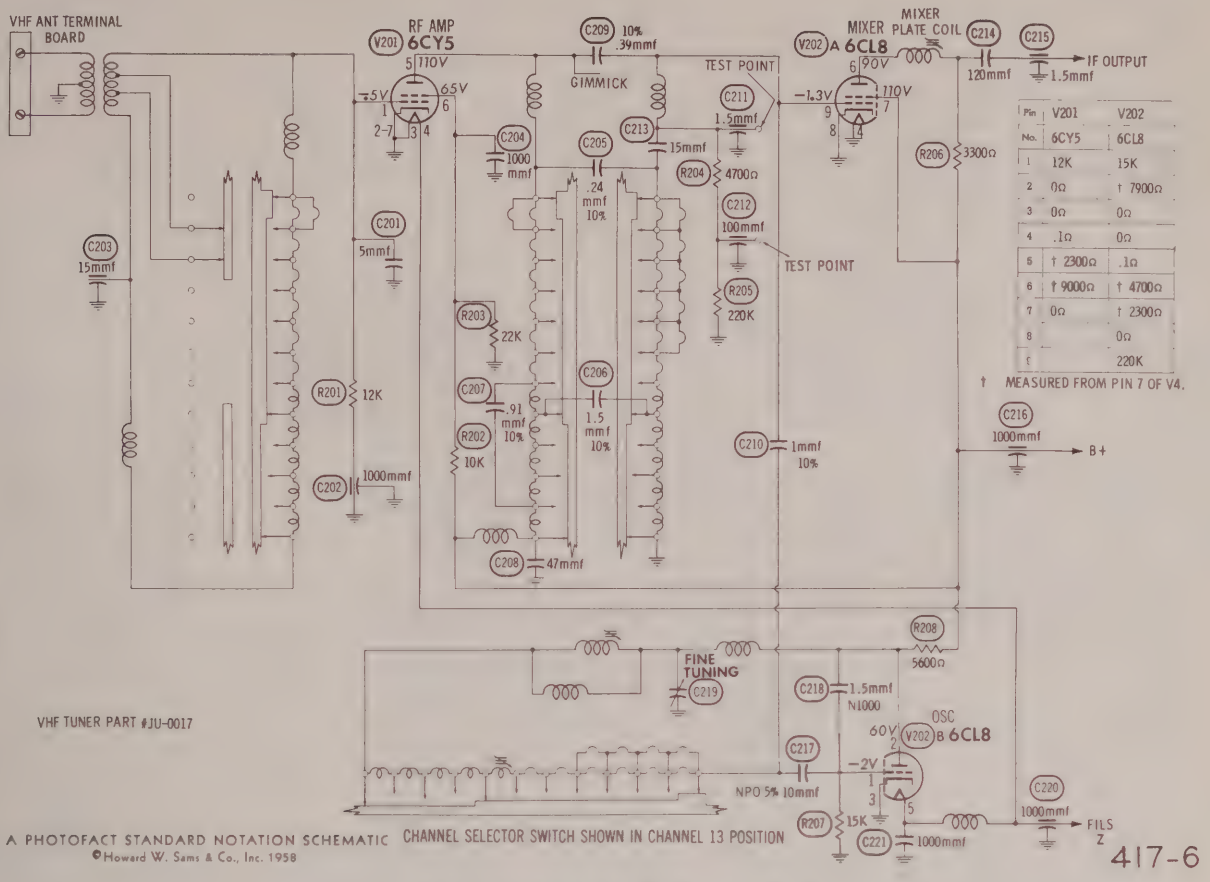
SET 417 FOLDER 6


C202
C203
C215
C220
C216
C212
C211
MIXER
PLATE
COIL


C214
R206
C221
C209
C205
R205
R204
C218
C217
C210
C213


R202
R207
R208
C219
R203
R201
C201
C204
C208
C207
C206

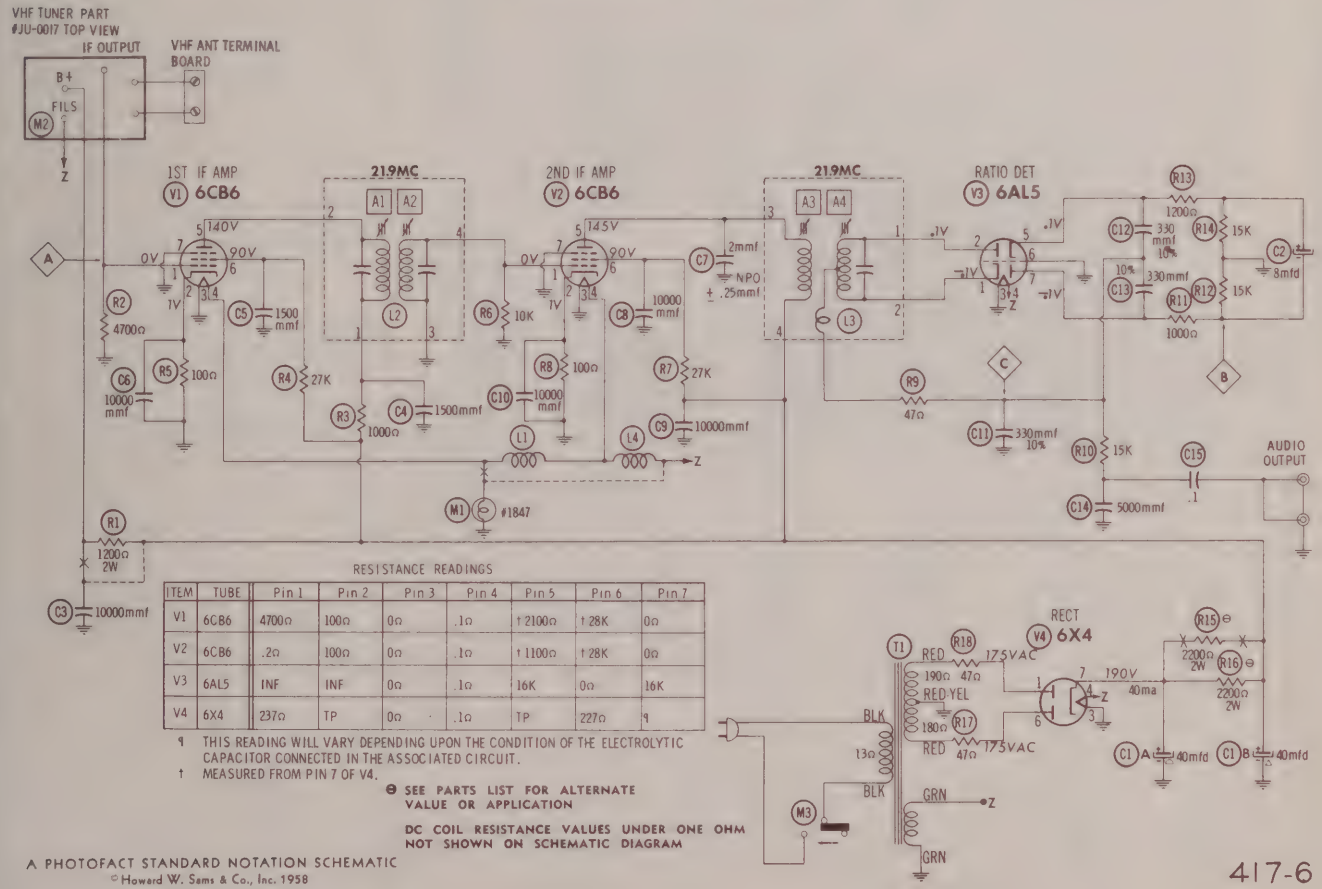
RF TUNER



Pin No.	V201 6CY5	V202 6CL8
1	12K	15K
2	0Ω	† 7900Ω
3	0Ω	0Ω
4	.1Ω	0Ω
5	† 2300Ω	.1Ω
6	† 9000Ω	† 4700Ω
7	0Ω	† 2300Ω
8		0Ω
f		220K

† MEASURED FROM PIN 7 OF V4.

RF TUNER SCHEMATIC

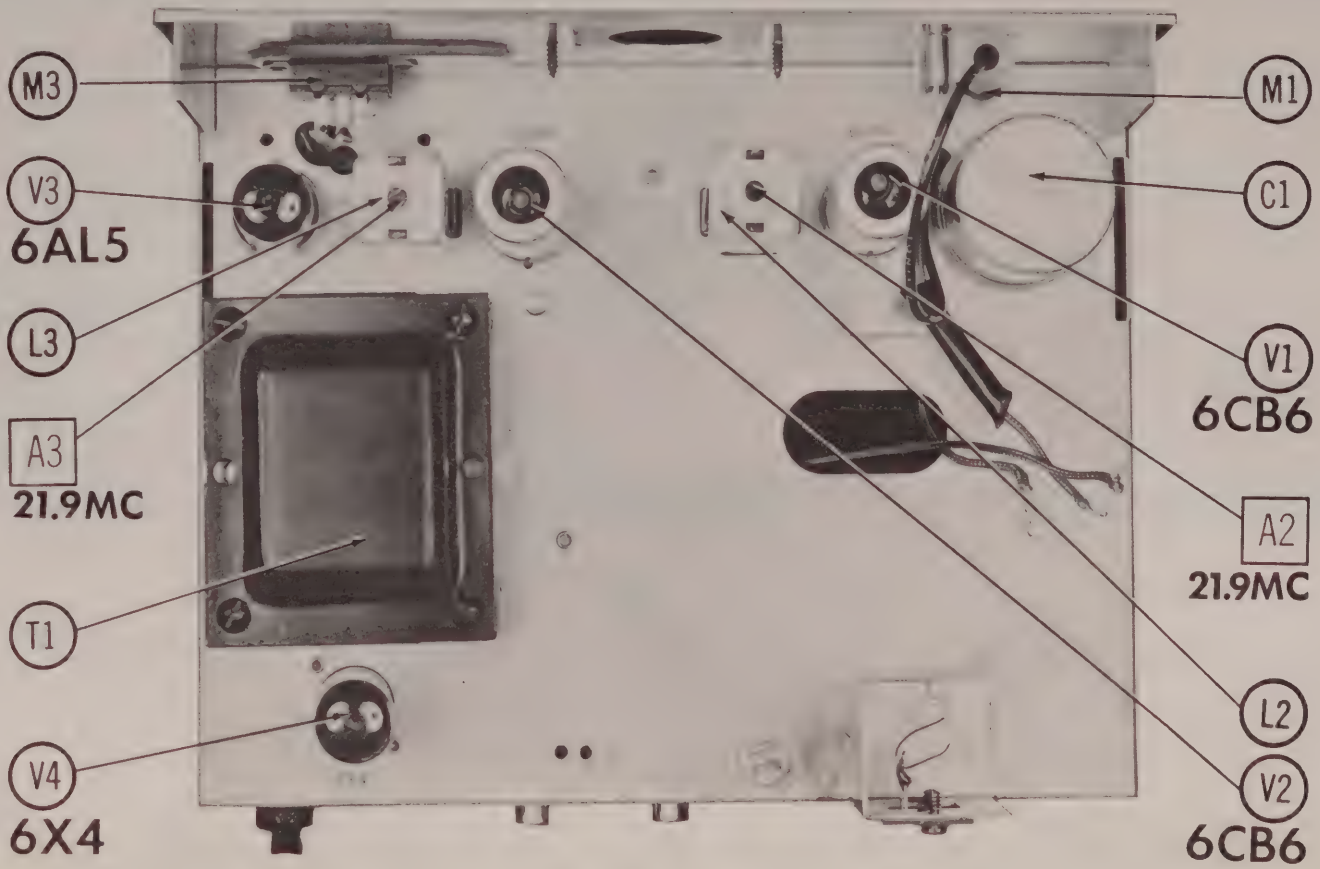


RESISTANCE READINGS

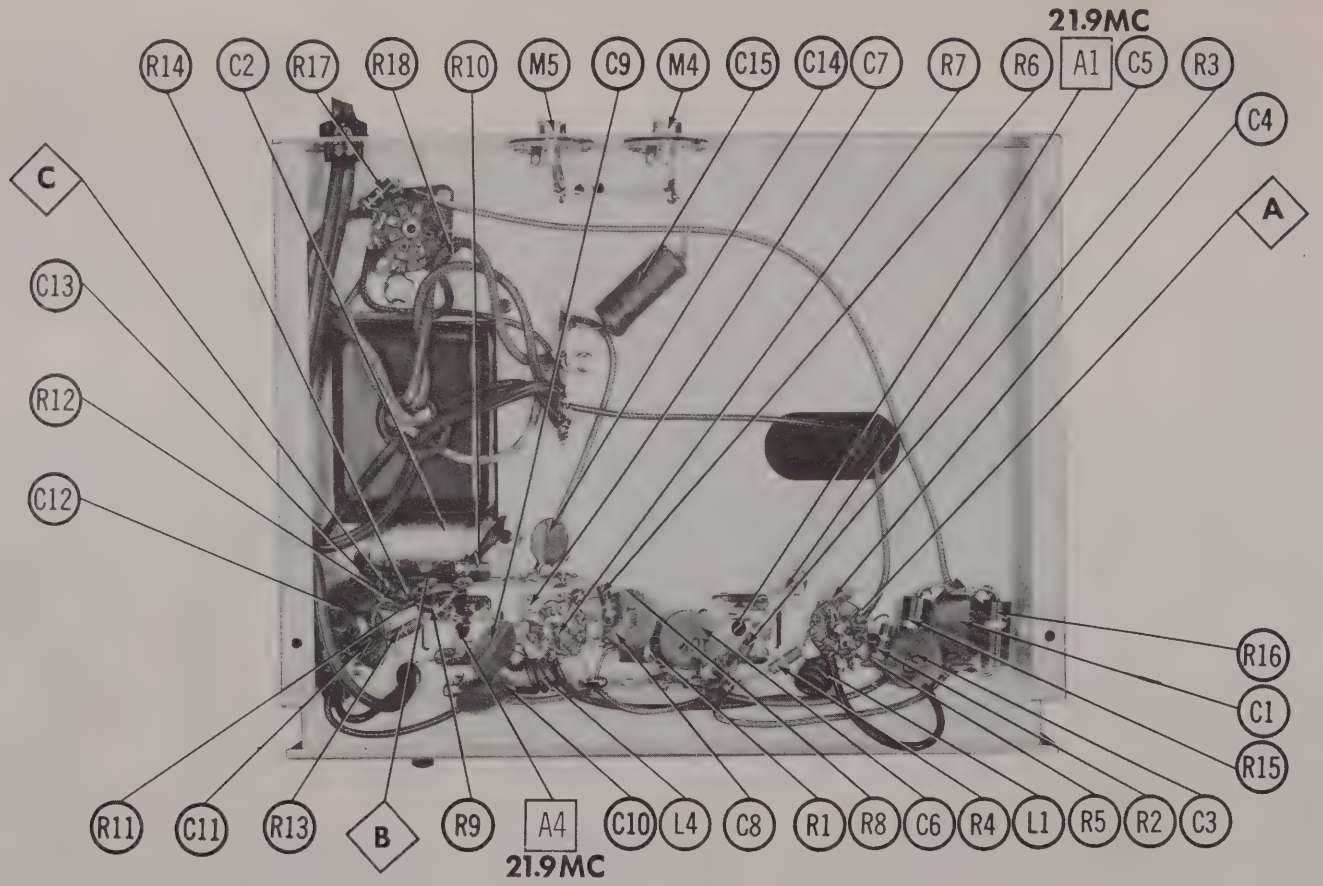
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6CB6	4700Ω	100Ω	0Ω	.1Ω	† 2100Ω	† 28K	0Ω
V2	6CB6	.2Ω	100Ω	0Ω	.1Ω	† 1100Ω	† 28K	0Ω
V3	6AL5	INF	INF	0Ω	.1Ω	16K	0Ω	16K
V4	6X4	237Ω	TP	0Ω	.1Ω	TP	227Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V4.
Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

IF-POWER SCHEMATIC



IF-POWER CHASSIS - TOP VIEW



IF-POWER CHASSIS - BOTTOM VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6CY5	
V202	Mixer-Osc.	6CL8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	5			DI-000005	DD-050	L10V5	ZT-555	5GA-V5	
C202	1000			EF-001	MFT-1000			503C-D1	
C203	15								
C204	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C205	.24								10%
C206	1.5			NPO-SI 1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	10%
C207	.91								10%
C208	47			BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C209	.39								10%
C210	1.0			NPO-SI 1	TCZ-1			5TCCB-V1	10%
C211	1.5								

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C212	100			EF-0001	MFT-100			503C-T1	
C213	15			BPD-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C214	120			BPD-00012	DD-121	L10T12	UC-5312	5GA-T12	
C215	1.5								
C216	1000			EF-001	MFT-1000			503C-D1	
C217	10			NPO-SI 10	TCZ-10	CTA6Q1C	ZT-541	5TCC-Q1	NPO 5% N1000
C218	1.5								
C219									
C220	1000			EF-001	MFT-1000			503C-D1	
C221	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	KNIGHT PART No.	NOTES
R201	12K			
R202	10K			
R203	22K			
R204	4700Ω			
R205	220K			
R206	3300Ω			
R207	15K			
R208	5600Ω			

IF-POWER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. IF Amplifier	6CB6	
V2	2nd. IF Amplifier	6CB6	
V3	Ratio Detector	6AL5	
V4	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	300		AFH 2-33	D0016	FP217. 87	TMD-31	D-130	TVL-2575
B	▲40	300							
C2	8	25		PRS150V8	BBR8-150	TC41	TD-8-150	MT-1508	TVA-1405

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C4	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C5	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C6	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C7	2			NPO-SI 2		C10V2C			NPO ±.25mmf
C8	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C9	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C10	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	330				MD-331	L10T33			10%
C12	330				MD-331	L10T33			10%
C13	330				MD-331	L10T33			10%
C14	5000			BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C15	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @.30A	355VCT @.043A	6.3V @2.1A	LP-0245						

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA KNIGHT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Fil. Choke		19-1000	BC-561	4594	VP-9	.9 Microhenry
L2	IF Trans.	LR-0044					
L3	Ratio Det.	LQ-0180					
L4	Fil. Choke		19-1000	BC-561	4594	VP-9	.9 Microhenry

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	KNIGHT PART No.	NOTES
R1	1200Ω	2		
R2	4700Ω			
R3	1000Ω			
R4	27K			
R5	100Ω			
R6	10K			
R7	27K			
R8	100Ω			
R9	47Ω			
R10	15K			
R11	1000Ω			
R12	15K			
R13	1200Ω			
R14	15K			
R15	2200Ω	2		Note 1
R16	2200Ω	2		Note 1
R17	47Ω			
R18	47Ω			

Note 1. When R15 is 110Ω, R16 is not used.

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M1	Lamp		#1847
M2	Tuner	JU-0017	VHF
M3	Switch		Power

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

*TRADE MARK

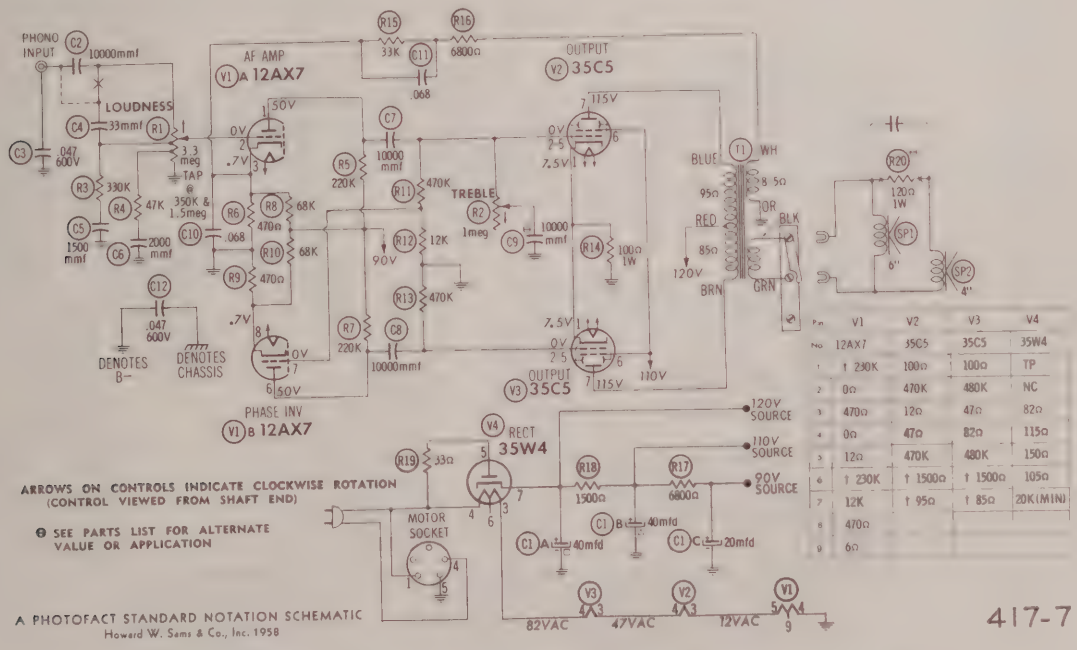
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MAGNAVOX
CHASSIS AMP-167AA

MAGNAVOX
CHASSIS AMP-167AA

TRADE NAME	Magnavox Chassis AMP-167AA
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne 4, Indiana
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Four)	Types 12AX7 AF Amp.-Phase Inv., (2) 35C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .31 Amp. @ 117 Volts AC (29 Watts Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M 1200A — PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.



No	V1 12AX7	V2 35C5	V3 35C5	V4 35W4
1	↑ 230K	100Ω	100Ω	TP
2	0Ω	470K	480K	NC
3	470Ω	12Ω	47Ω	82Ω
4	0Ω	47Ω	82Ω	115Ω
5	12Ω	470K	480K	150Ω
6	↑ 230K	↑ 1500Ω	↑ 1500Ω	105Ω
7	12K	↑ 95Ω	↑ 85Ω	20K(MIN)
8	470Ω			
9	6Ω			

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

417-7

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. -Phase Inv.	12AX7	
V2	Output	35C5	
V3	Output	35C5	
V4	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	270023-24	AFH3-10	C0090	FP311.5	TMT-9	T-040	R-1110 *
B	▲40	150							
C	20	150							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		250211-7	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	.047	600	250201-11	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C4	33		250187-47	1468-000033	D6-330	5W5Q33	UC-5433	1FM-433	
C5	1500		250218-18	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C6	2000		250218-20	BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C7	10000		250175-2	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	10000		250175-2	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C9	10000		250175-2	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	①
C10	.068	200	250202-12	P288N-068		CUB6S68	GEM-6168	6TM-S68	
C11	.068	200	250202-12	P288N-068		CUB6S68	GEM-6168	6TM-S68	
C12	.047	200	250201-11	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	3.3meg	½	220131-11				UDT-305	Loudness, Tap ②350K & 1.5meg
B	Shaft						Not Req.	
R2A	1meg	½	220072-32	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

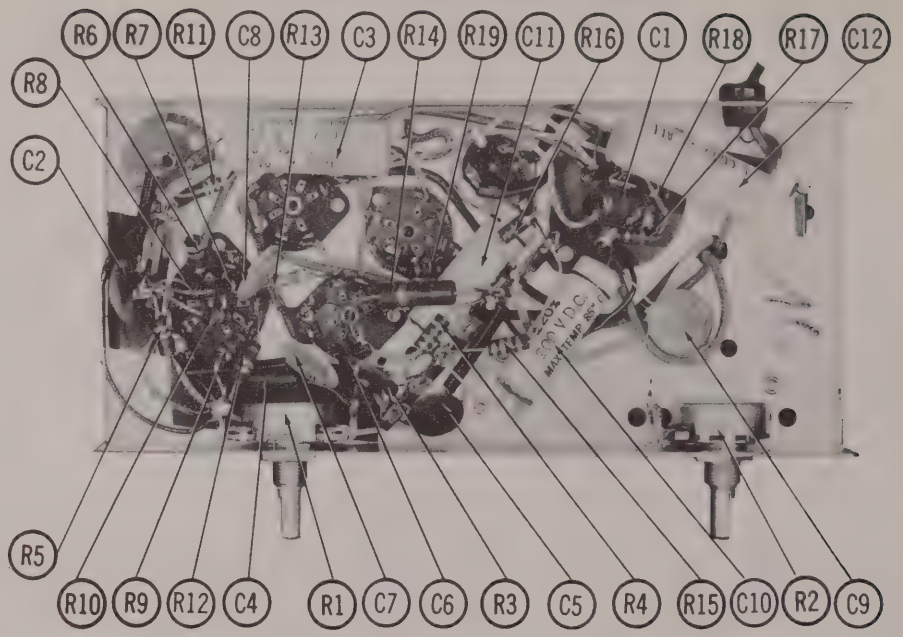
ITEM No.	RATING		MAGNAVOX PART No.	NOTES
	OHMS	WATT		
R3	330K		230104-92	
R4	47K		230104-82	
R5	220K		230104-90	
R6	470Ω		230104-58	
R7	220K		230104-90	
R8	68K		230104-84	
R9	470Ω		230104-58	
R10	68K		230104-84	
R11	470K		230104-94	
R12	12K		230104-75	
R13	470K		230104-94	
R14	100Ω	1	230105-50	
R15	33K		230104-80	
R16	6800Ω		230104-72	
R17	6800Ω		230104-72	
R18	1500Ω		230104-64	
R19	33Ω		230104-44	
R20	120Ω	1		①

① Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC. 1	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3700Ω	3-4Ω	320265-1							
	Turns	Ratio								
		SEC. 2								
	15	: 1								

CHASSIS—BOTTOM VIEW



SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MAGNAVOX PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	583792	6A15	
SP2	4"	PM	3-4Ω	583779-1	4A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	MAGNAVOX PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		55-T or 81-TB	GD-J			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	MAGNAVOX PART No.	JENSEN PART No.	WALCO PART No.	
M2		†S-66 or †♦S-66SD or ♦S-66D	†W-75TPS or †♦W-75DS or ♦W-75TPD	† Jewel ♦ Diamond

WIRING DATA

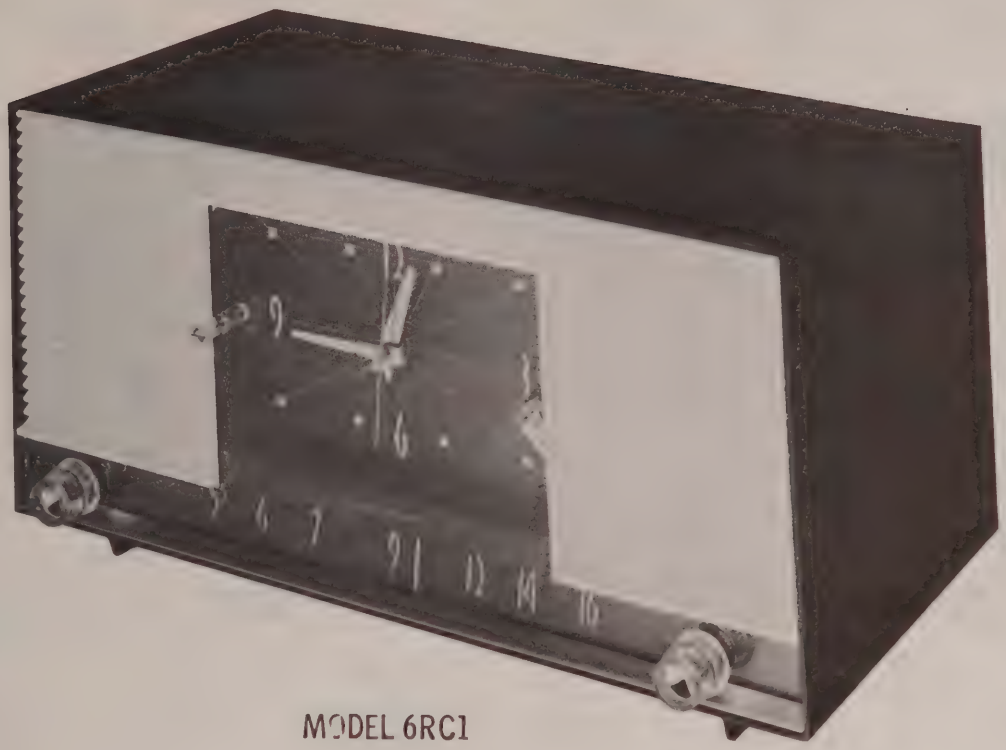
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PACKARD-BELL MODELS 6R1, 6RC1

PACKARD-BELL
MODELS 6R1, 6RC1



MODEL 6RC1

PACKARD-BELL
MODELS 6R1, 6RC1

TRADE NAME	Packard-Bell Models 6R1, 6RC-1
MANUFACTURER	Packard-Bell Co., Service Div., 11th & Hope Streets, Los Angeles 15, Calif.
TYPE SET	AC Operated AM Receiver (Model 6RC-1 is Clock Version)
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 35C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.27 Amp. @ 117 Volts AC (25 Watts Less Clock)
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 12BA6 (V1). Low side to B-.	455KC (400% Mod.)	Tuning gang fully open	Across voice coil	A1	Adjust for MINIMUM output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	"	"	"	A2, A3, A4, A5	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
3.	"	"	1620KC	1620KC	"	A6	"
4.		Loop	1400KC	Tune to 1400KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H640

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	
V4	Det.-AVC-AF Amp.	12AV6	
V5	Output	35C5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	24073B	PRS150V5050	BBRD5515	TCD49	TDLD-9	MTD-1550	TVA-2453
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	200	23705	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C3	220		23915	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C4	47		23912	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C5	47		23912	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C6	220		23915	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C7	5000		23931	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C8	470		23916	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C9	10000		23939	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C10	10000		23939	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C11	.047	200	23705	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C12	.1	200	23707	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	25047				PP55A	Volume and Switch

RESISTORS

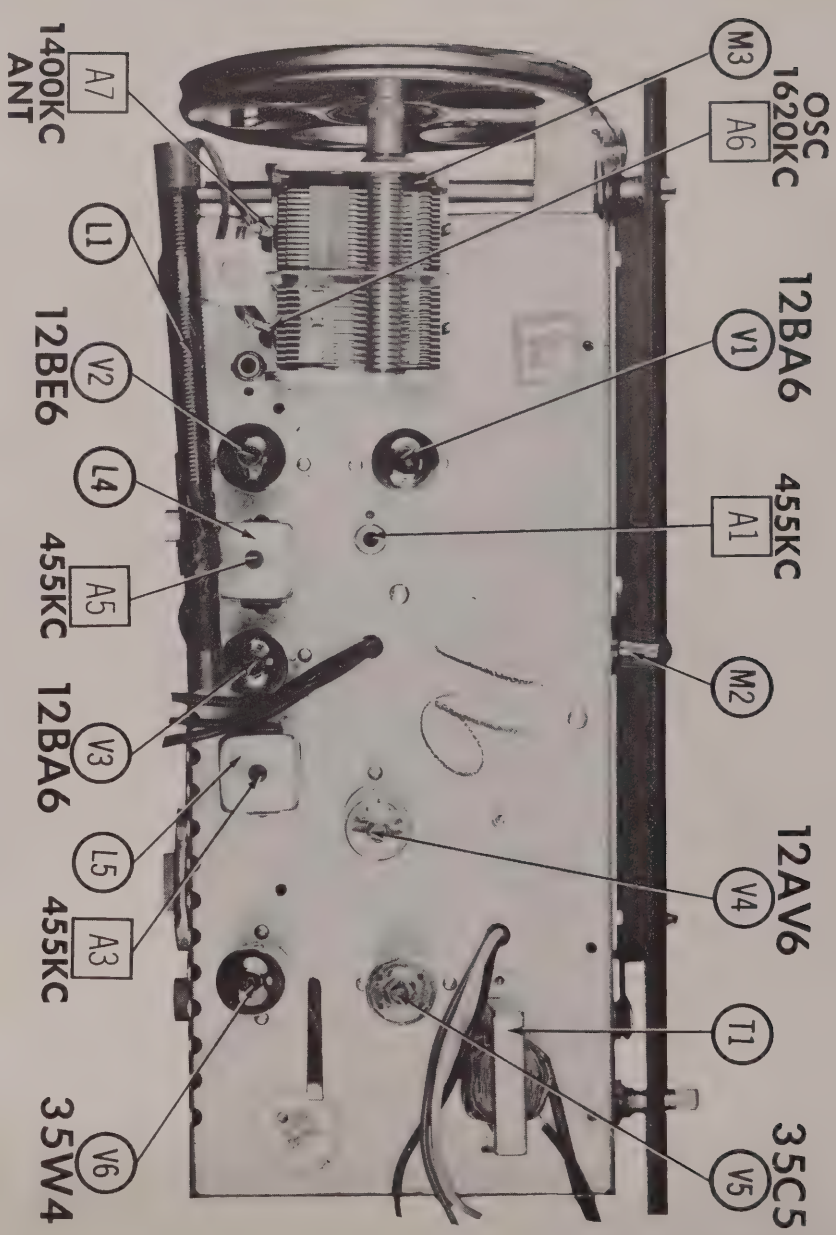
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R2	4700Ω		73033	
R3	68Ω		73011	
R4	1meg		73161	
R5	22K		73041	
R6	68Ω		73011	
R7	2.2meg		73165	
R8	4.7meg		73169	
R9	220K		73153	
R10	470K		73157	
R11	150Ω		73015	
R12	1000Ω	1	73325	
R13	68Ω		73011	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Packard-Bell PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	29358					
L2	IF Trap	29088					
L3	Osc. Coil	29229B	14-1077	BC-393	60-Osc.		
L4	Input IF	29077	16-6758	BC-352	12-C1	RF-1	
L5	Output IF	29078	16-6758	BC-353	12-C2	RF-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	89417A	Z1101	A-3025	AU-605	A-3332	26S58	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	QUAM PART No.	
SP1	3"	PM	3-4Ω	83120 ①		① Used in Model 6RC1
SP2	3"	PM	3-4Ω	83120 ①		
	4" X 6"	PM	3-4Ω	83122 ②		② Used in Model 6R1

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M1	Lamp	54007	#43, Model 6RC-1 only
M2	Dial Lamp	54002	#47
M3	Tuning Cap.	23550A	2 Gang (Ant. 42-488mmf, Osc. 32-177mmf)
M4	Timer	58064A	Clock
	Plug	66047	AC Interlock
	Socket	79096	AC Appliance

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

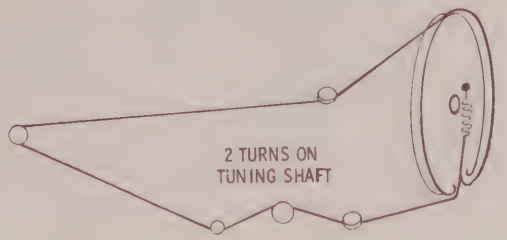
NAME	PART NO.	DESCRIPTION
Knob	52227A	Tuning, On-Off-Volume
Knob	52226B	Timer, Two used
Cabinet	21142D	
Dial	38161A	
Pointer	67045A	

WIRING DATA

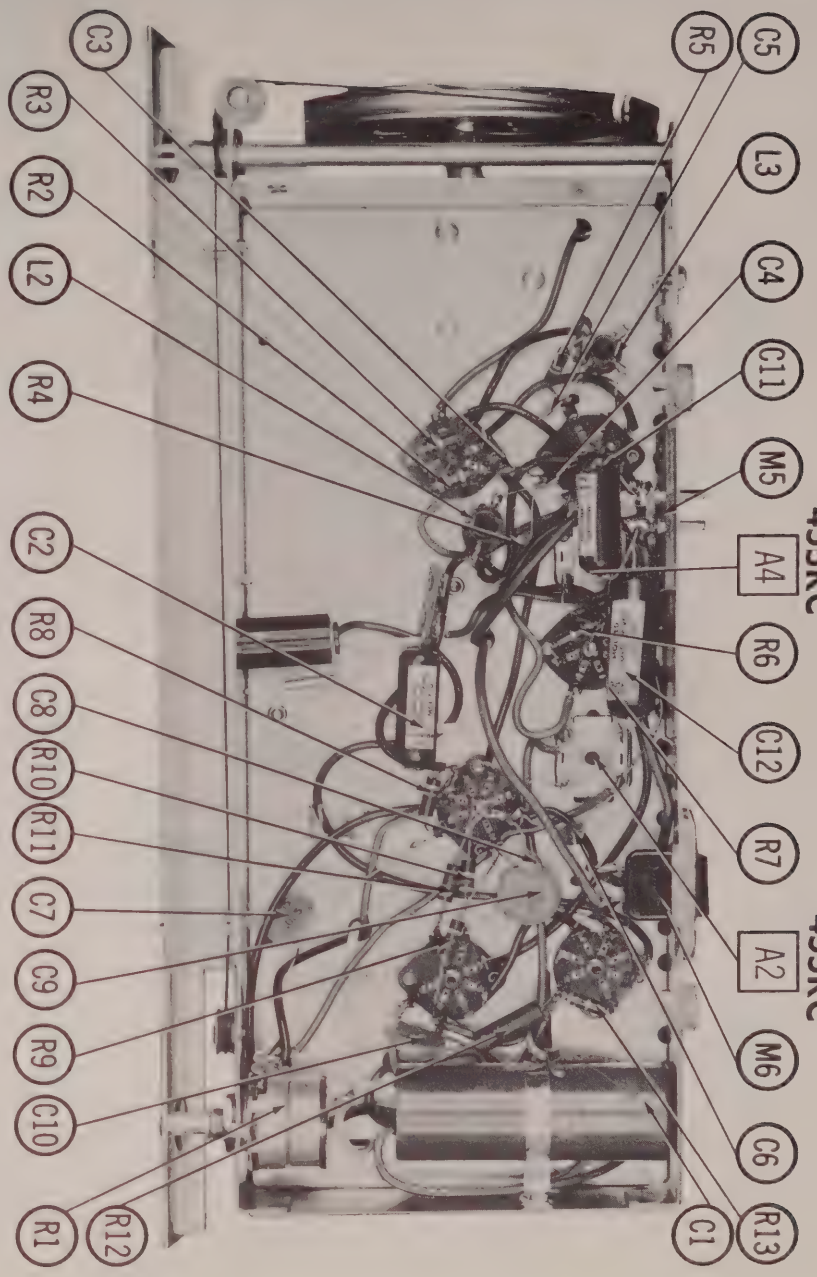
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

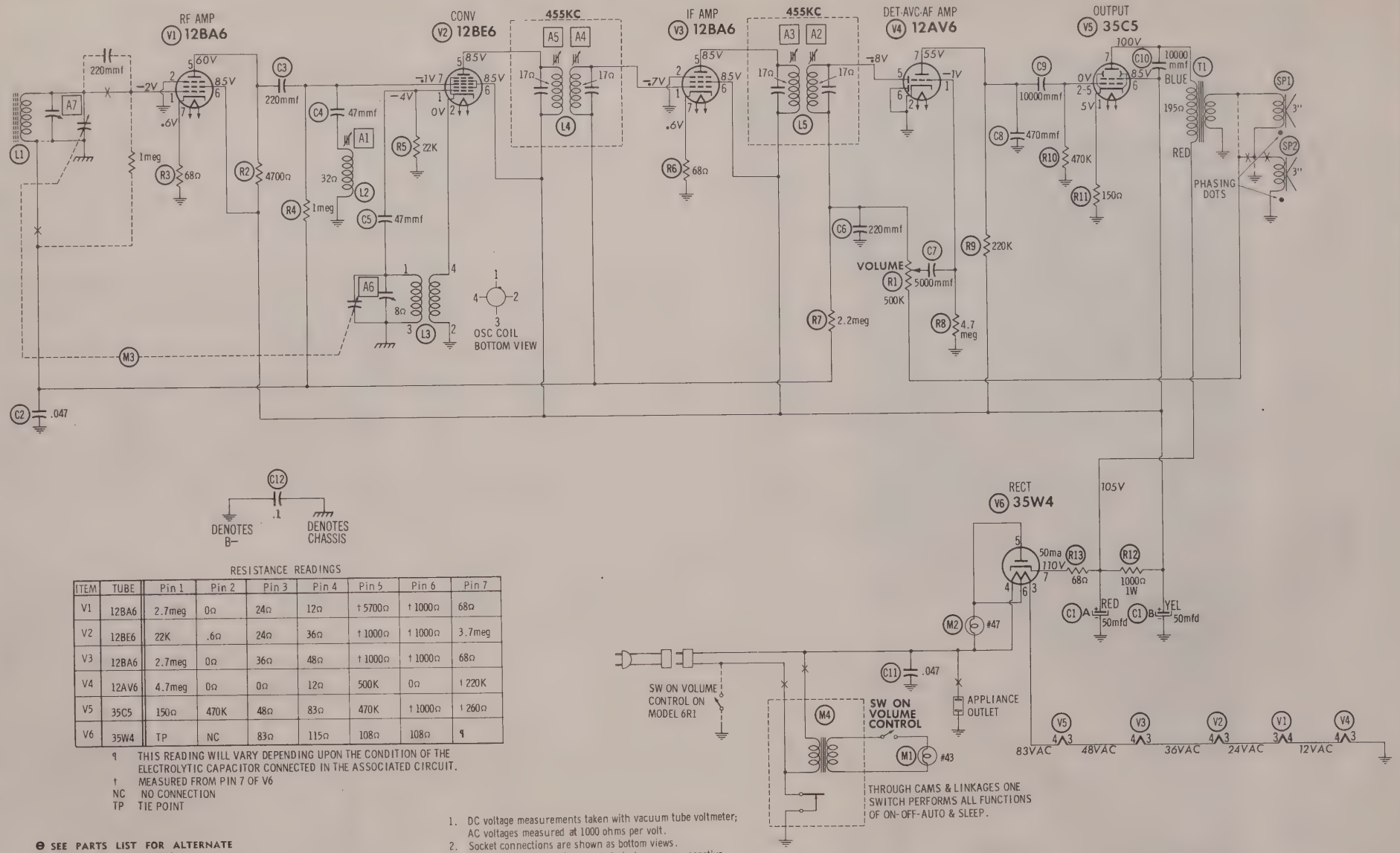
Power Cord (Interlock Type) ..... Use BELDEN No. 8874

DIAL CORD STRINGING



CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	2.7meg	0Ω	24Ω	12Ω	†5700Ω	†1000Ω	68Ω
V2	12BE6	22K	.6Ω	24Ω	36Ω	†1000Ω	†1000Ω	3.7meg
V3	12BA6	2.7meg	0Ω	36Ω	48Ω	†1000Ω	†1000Ω	68Ω
V4	12AV6	4.7meg	0Ω	0Ω	12Ω	500K	0Ω	†220K
V5	35C5	150Ω	470K	48Ω	83Ω	470K	†1000Ω	†260Ω
V6	35W4	TP	NC	83Ω	115Ω	108Ω	108Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V6
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

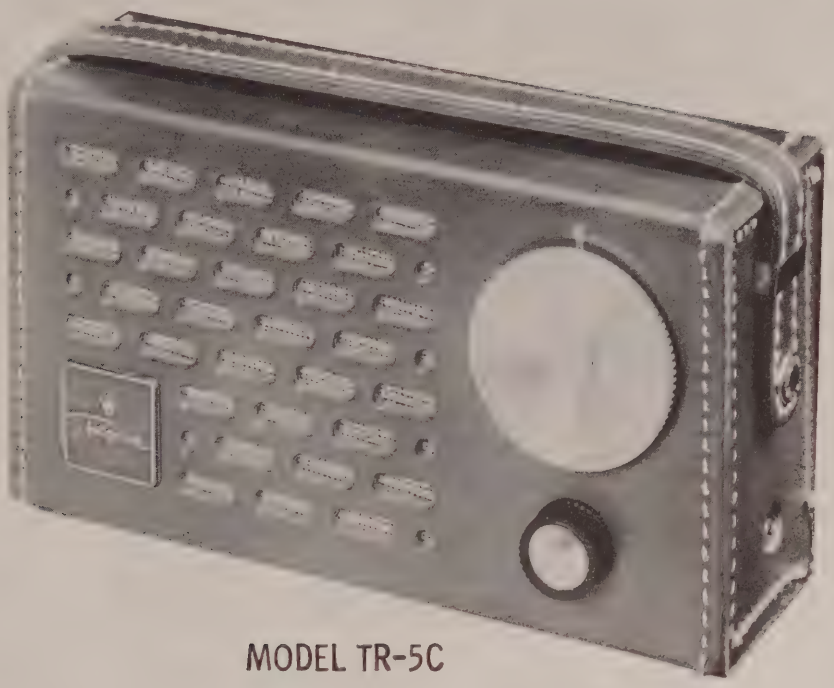
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder with CIRCUITRACE*

REGENCY MODELS TCR-2A, TR-5C, TR-7, TR-8A

REGENCY MODELS TCR-2A, TR-5C, TR-7, TR-8A



MODEL TR-5C

REGENCY MODELS TCR-2A, TR-5C, TR-7, TR-8A

TRADE NAME	Regency Models TCR-2A, TR-5C, TR-7, TR-8A
MANUFACTURER	Regency Div., I.D.E.A., Inc., 7900 Pendleton Pike, Indianapolis 26, Indiana
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	4.5 Volts DC
TUNING RANGE—BROADCAST	535 - 1630KC
RATING	14MA @ 4.5 Volts DC (No signal, min. volume) 17MA @ 4.5 Volts DC (Signal, normal volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1630KC	"	"	A4	"
3.		"	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.
4.		"	1500KC	Tune to 1500KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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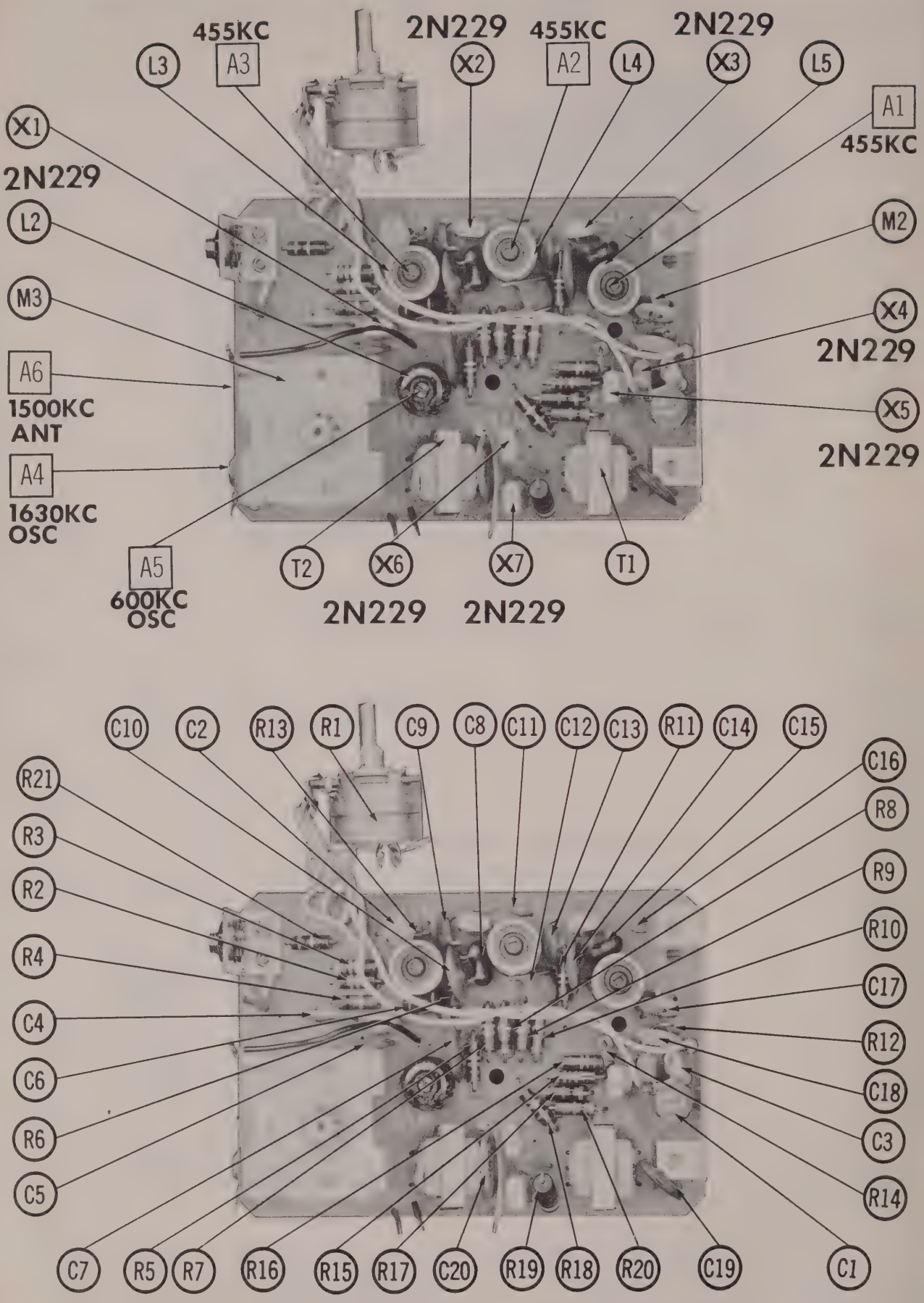
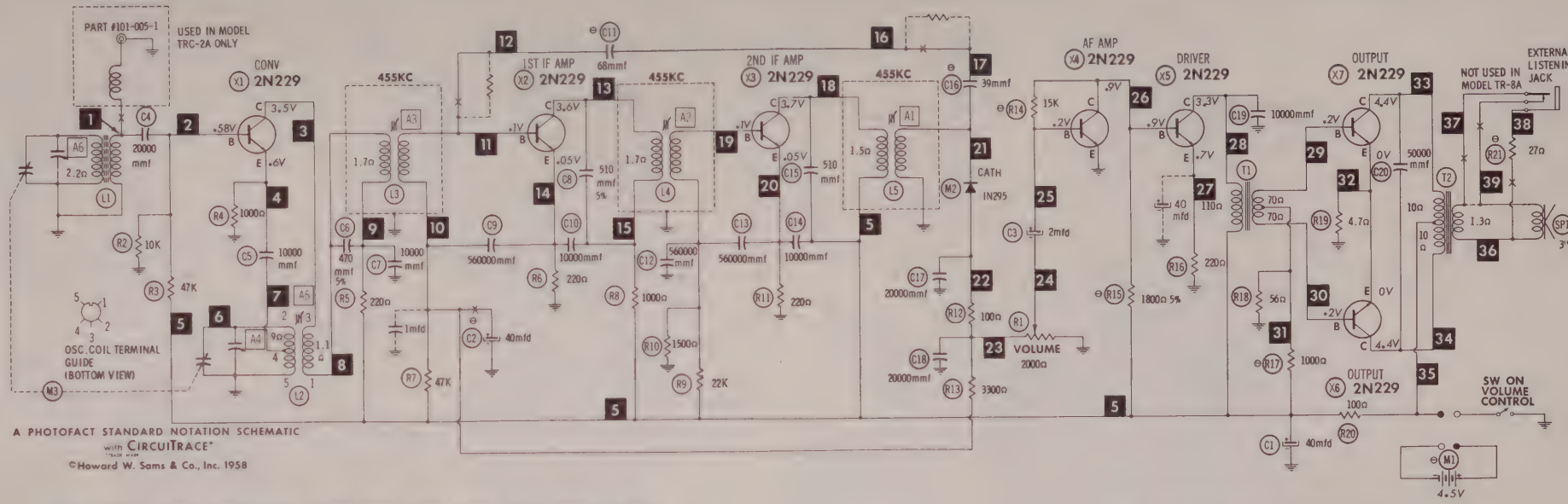
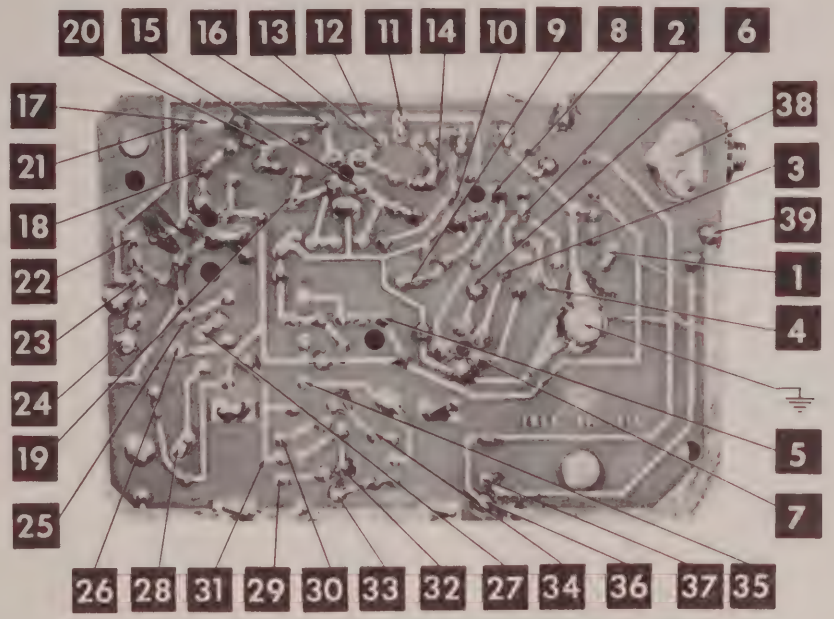
SET 417 FOLDER 9



CHASSIS-TOP VIEW





RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A Howard W. Sams CIRCUITRACE* Photo
*TRADE MARK

417-9

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N229	Converter	CBS-2N438				NPN
X2	2N229	1st IF Amplifier	CBS-2N438				NPN
X3	2N229	2nd IF Amplifier	CBS-2N438				NPN
X4	2N229	AF Amplifier	CBS-2N438				NPN
X5	2N229	Driver	CBS-2N438				NPN
X6	2N229	Output	CBS-2N438				NPN
X7	2N229	Output	CBS-2N438				NPN

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	REGENCY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	12	30-473-10	XPP-12040	NL50-10	TT15X40	ML40-15	MQ-0130	R2329 *
C2	40	3	①	PWE3040	NL40-3	TT3X40	ML40-6		TE-1057
C3	2	3	300-473-1	XPP-3002	NL2-3	TT6X2	ML2-6		TE-1051

① Not used in some versions. * Non Catalog Item

FIXED CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	REGENCY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	20000		100-772-2	BPD-02	DD-203	BYB6S2		5HK-S2	
C5	10000		20-075-22	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C6	470			1464-00047		5R5T47		MS-347	5%
C7	10000		20-075-22	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C8	510			1464-00051		5R5T51		MS-351	5%
C9	560000								
C10	10000		20-075-22	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C11	68			DI-000068	DD-680	L10Q68	UC-5468	5GA-Q68	Note 1
C12	560000								
C13	560000								
C14	10000		20-075-22	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C15	510			1464-00051		5R5T51		MS-351	
C16	39			DI-000039	DD-390	L10Q39	UC-5439	5GA-Q39	Note 1
C17	20000		100-772-2	BPD-02	DD-203	BYB6S2		5HK-S2	
C18	20000		100-772-2	BPD-02	DD-203	BYB6S2		5HK-S2	
C19	10000		20-075-22	BPD-01	DD-103	BYA6S1	DC511	TG-S10	
C20	50000		100-772-7	BPD-05				TG-S50	

Note 1. Value may vary from 10mmf to 210mmf. Replace with original value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REGENCY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A B	2000Ω Switch	½	300-621-1					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REGENCY PART No.	NOTES
	OHMS	WATT		
R2	10K			
R3	47K			
R4	1000Ω			
R5	220Ω			
R6	220Ω			
R7	47K			
R8	1000Ω			
R9	22K			
R10	1500Ω			
R11	220Ω			

ITEM No.	RATING		REGENCY PART No.	NOTES
	OHMS	WATT		
R12	100Ω			
R13	3300Ω			
R14	15K			①
R15	1800Ω 5%			②
R16	220Ω			
R17	1000Ω			③
R18	56Ω			
R19	4.7Ω			
R20	100Ω			
R21	27Ω			④

① Some versions may use 10K in this application.
② Some versions may use 2200Ω or 2500Ω in this application.
③ Some versions may use 1200Ω or 1500Ω in this application.
④ Not used in Model TR-8A.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REGENCY PART No.	QUAM PART No.	
SP1	3"	PM	12Ω	300-606		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		REGENCY PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	300-707-1					
L2	Osc. Coil	300-683-3					
L3	1st IF Trans.	300-682-6					
L4	2nd IF Trans.	300-682-6					
L5	3rd IF Trans.	300-682-7					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	REGENCY PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	:1	300-704						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	REGENCY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	175ΩCT	12Ω	300-705				TA-19			

BATTERIES

ITEM No.	VOLTAGE	REGENCY PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	4.5V	101-105 (#815)		2Z3		243			Models TR-5C, TR-8A & TRC-2A
	4.5V								Use 3 Type "AA" in series; Model TR-7

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		REGENCY PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295		1N60	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	REGENCY PART No.	NOTES
M3	Tuning Cap.	300-624-2	2 Gang (Ant. 12-137mmf, Osc. 16-98mmf), Model TR-5C
	Tuning Cap.	300-738-1	Same as above, Model TR-7
	Tuning Cap.	300-654-2	Same as above, Models TR-8A, TCR-2A
	Battery Connector	101-107	Models TR-5C, TR-8A, TCR-2A
	Battery Holder	300-748	Model TR-7
	Earphone	300-501	EP-1, Models TR-5C, TR-7, TCR-2A
	Printed Board	600-091	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	101-106	Tuning, Model TR-5C
Knob	100-906-4	Tuning, Models TR-8A & TCR-2A
Knob	300-746	Tuning, Outer, Model TR-7
Knob	101-200	Tuning, Inner, Model TR-7
Knob	100-924	On-Off-Volume, Model TR-5C
Knob	101-190-1	On-Off-Volume, Model TR-7
Knob	100-906-3	On-Off-Volume, Models TR-8A & TCR-2A
Case	500-335	Leather (Specify Briarwood, Calif. Saddle or Champaigne), Model TR-5C
Cabinet	500-413	Plastic (Black or Ivory), Model TR-7
Cabinet	500-365-1	Metal (Specify Color), Models TR-8A & TCR-2A
Cover	500-395-2	Front, Model TR-8A
Cover	500-391-1	Front, Model TCR-2A
Label	100-955	Color, to match Leather Case
Pointer	100-995	Models TR-8A & TCR-2A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE CHASSIS 528.56100 thru 106, 528.56110 thru 117, 528.56120 thru 125, 528.56130 thru 136, 528.56160, 170, 220, 221, 230, 231, 240, 241, 250, 251, 260, 261, 270, 271, 300, 310

SILVERTONE CHASSIS 528.56100 thru 106, 528.56110 thru 117, 528.56120 thru 125, 528.56130 thru 136, 528.56160, 170, 220, 221, 230, 231, 240, 241, 250, 251, 260, 261, 270, 271, 300, 310

GENERAL INFORMATION

Silvertone record changers automatically change as many as ten 12" records; twelve 10" records; ten 7", 33 1/3-rpm records; or fifteen 7", 45-rpm records; or any assortment of ten 7", 10", and 12" records of the same speed.

These changers have four speeds: 16 2/3, 33 1/3, 45, and 78 rpm.
Seven-inch, 45-rpm records can be played on these changers by inserting an adaptor in the record, or with a special 45-rpm spindle available as an accessory.

Connect these changers to an outlet supplying 117 volts, 60 cycle AC only unless otherwise specified.

Supplied by:

Sears, Roebuck & Company

925 South Homan Ave.
Chicago 7, Illinois

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

C372

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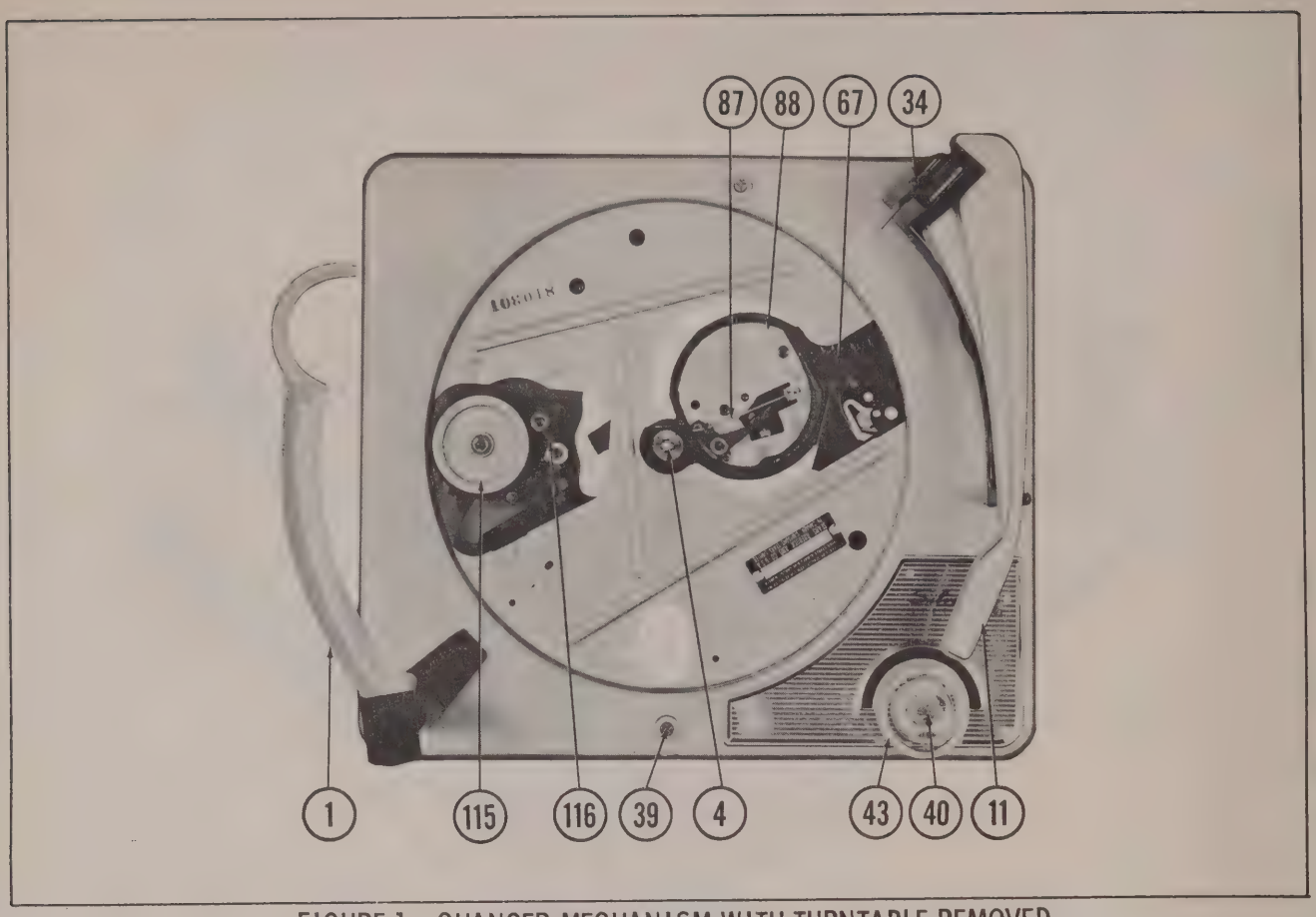


FIGURE 1. CHANGER MECHANISM WITH TURNTABLE REMOVED

DISASSEMBLY INSTRUCTIONS

1. Disconnect three leads.
2. Disconnect two phono leads.
3. Remove retainer clip at front of chassis.
4. Remove "C" washer at rear of chassis.
5. Lift chassis straight up and out.

DIFFERENCES AMONG SILVERTONE CHANGERS

Silvertone record changers are similar mechanically. The major differences are in the motor and tone arm used in the various chassis.

NOTE: For information about the preceding, refer to the Exploded View and Parts List.

SHIPPING SCREWS

Before operating the record changer, it must be floating freely on mounting springs (48). During shipment the mechanism is secured by two screws (32) and (39). To float the changer, turn the two screws fully clockwise.

LEVELING RECORD CHANGER

For best results, the record changer should be level. Use a suitable level on the baseplate. Adequate shims can be used under the baseplate or cabinet to achieve a perfect level.

OPERATING INSTRUCTIONS

Loading

1. Lift straight up on pressure arm (1) until it clears spindle (4). Swing pressure arm (1) to the left until its locating pin drops into the locating groove of pressure arm housing (3).

NOTE: 16 2/3-, 33 1/3-, 45-, and 78-rpm records cannot be intermixed. Speed control knob must be reset for each type of record.

2. Place records on spindle (4) and lower to offset shelf. Hold records level and replace pressure arm (1) over records.

To Play 78-rpm Records

1. Speed control knob must be in 78 position.
2. On changers using a turnover needle, turnover lever must be set for 78 position.
3. To start changer, turn Off-On-Reject knob to Reject position and release slowly to On position. Changer now operates automatically until last record has been played, at which time tone arm (11) returns to its rest and the mechanism shuts off.

To Play 45-rpm Records

1. Speed control knob must be in 45 position.
2. On changer having a turnover needle, the turnover lever must be in LP position.

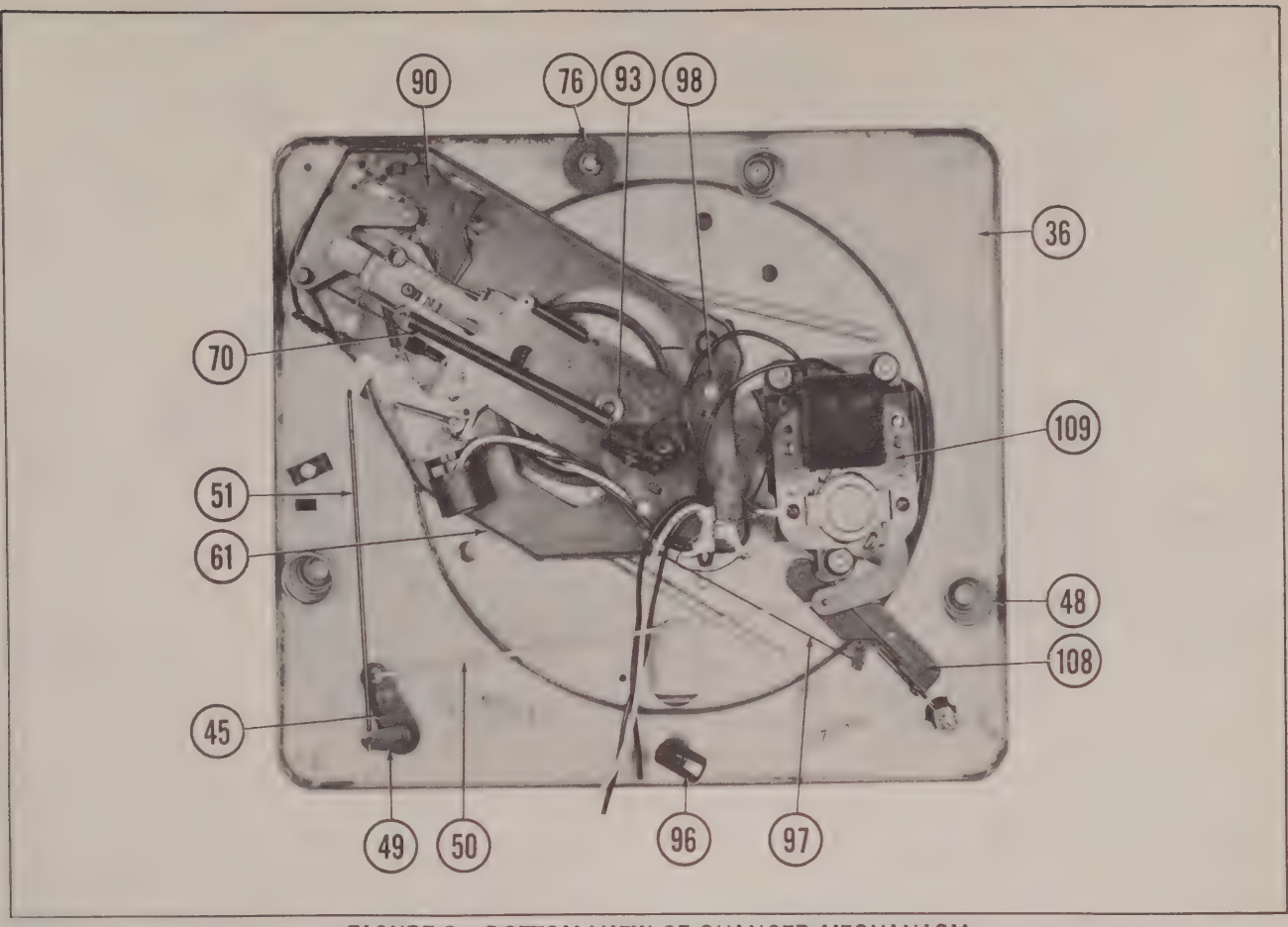


FIGURE 2. BOTTOM VIEW OF CHANGER MECHANISM

3. 45-rpm records are manufactured with a 1 1/2" center hold. When used with conventional spindle (4), an adaptor must be inserted in the record. However, a special spindle eliminating the need for an adaptor is available.

45-rpm Spindle Operating Instructions

1. Lift up on pressure arm (1) and turn to left as far as it will go.

2. Be sure tone arm is in its rest position.

3. Squeeze slightly actuator (124) and place on spindle (4) with actuator (124) facing selector housing (34). Turn 45-rpm spindle slightly to left or right until bottom slot lines up with gate on spindle (4). Push down on 45-rpm spindle until it rests on turntable. The unit will now play 45-rpm records.

To Play 33 1/3-rpm Records

1. Speed control knob must be in 33 position.

2. On changers having a turnover needle, turnover lever must be in LP position.

Rejecting

To reject a record, turn Off-On-Reject knob to Reject and slowly release to On position.

NOTE: When changer is to be out of service for any length of time, it should be left in neutral. This position is identified by the letter N engraved on the escutcheon. When in this position, the motor shaft and drive wheel do not come into contact, thereby preventing any flat spots from developing on the tire.

These changers are equipped with a velocity trip mechanism. The change cycle is started by the faster inward motion of the tone arm when the needle enters the leadout groove at the end of the record.

Tone arm assembly and tone arm actuating lever (65) are secured at opposite ends of the tone arm shaft so that they move in unison As tone arm nears end of record, tone arm actuating lever (65) pushes long push trip rod (67). This engages short push trip rod (87), rotating pawl locator (82) to move trip pawl (84) toward turntable hub by action of thrust washer (83). While a record is playing, small motions of trip pawl (84) are not sufficient to trip the mechanism because, on each revolution of the turntable, wiping action by trip cam (point A on Exploded View) moves trip pawl (84) back far enough to clear the trip cam.

When the needle enters the leadout grooves, causing tone arm to advance rapidly toward spindle, trip pawl (84) is moved far enough to engage trip cam (point A on Exploded View). As trip cam engages trip pawl (84), cam wheel (88) is pushed counterclockwise until it contacts serrated portions of turntable hub. When turntable rotates, eccentric cam wheel (88) rotates, pushing main slide (68) away from spindle.

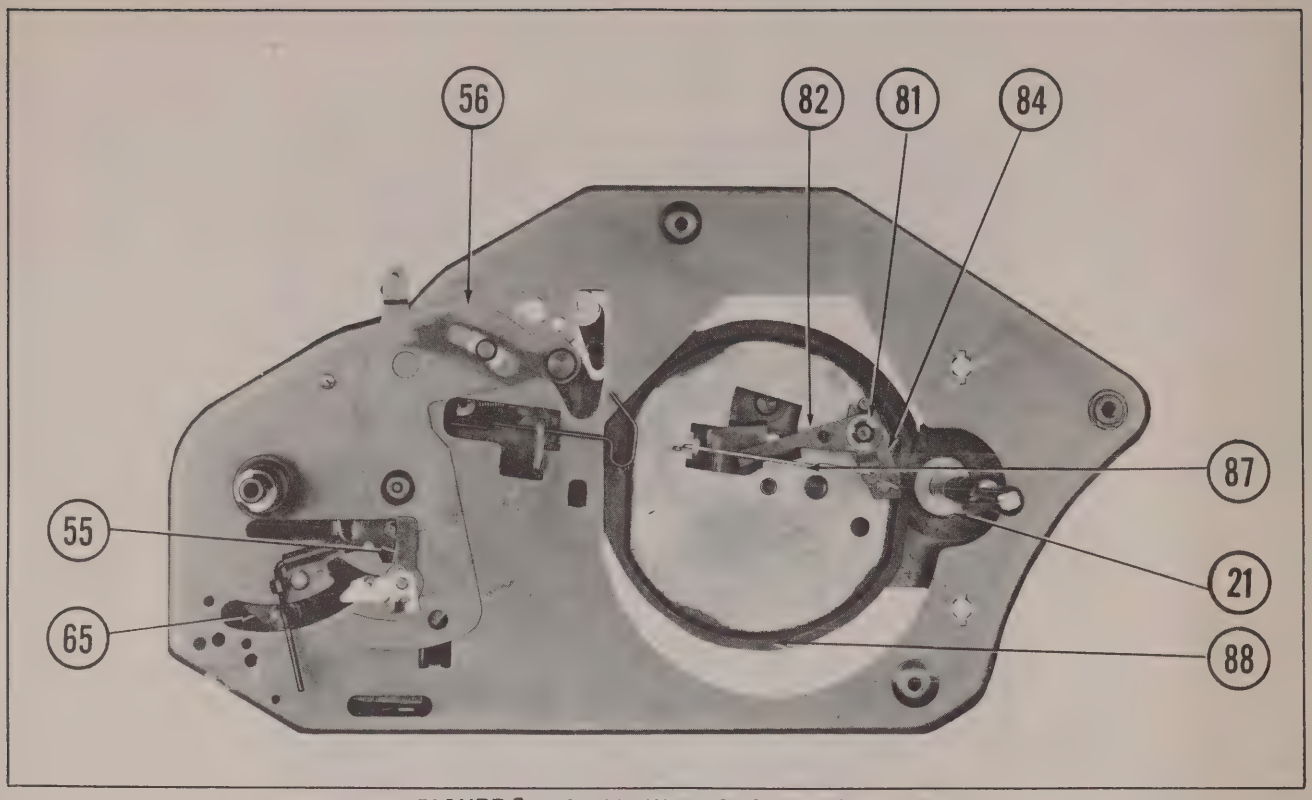


FIGURE 3. TOP VIEW OF CYCLE MECHANISM

As main slide (68) begins to move, the cam surface (point B on Exploded View) pushes lift shaft (57) upward, raising tone arm clear of record. At the same time, actuating lever return spring (69) contacts tone arm actuating lever (65), swinging tone arm clear of turntable.

As cam wheel (88) continues to rotate, positioning stud on main slide (68) contacts and moves pawl locator (82) across cutout in cam wheel (88), resetting trip pawl (84) for next change cycle.

At the same time, lift rod (54) rides down incline on rear of main slide (68), allowing upper selector lever assembly friction slide (31) to pivot upward and friction slide (28) to be pushed downward by friction slide return spring (29). As upper selector lever assembly (31) pivots outwardly positioning rod (24) drops down in front of tabs on lower selector assembly (90).

Front edge of slot (point C on Exploded View) in main slide (68) now contacts ejector link on spindle mounting bracket (98). Ejector link moves pushoff shaft (4A) upward, actuating spindle assembly (4), dropping a record onto turntable.

Simultaneously, stud on tone arm actuating lever (65) engages lower selector assembly (90), moving it clear of locking lever (53). At this time, main slide (68) moves toward spindle.

If a 7" record is being changed, positioning rod (24) remains in front of 12" and 10" selector levers (90), preventing the levers from engaging with stud on tone arm actuating lever (65). The 7" selector lever is now free to move against stud on tone arm actuating lever (65).

If a 10" record is being changed, the edge of the record strikes selector lever arm on upper selector assembly (31), moving it down far enough to lift positioning rod (24) clear of 10" selector lever (part of item 90). In this position, the 12" selector lever is locked in position, and 7" and 10" selector levers contact stud on tone arm actuating lever (65). Since setdown step in 10" selector lever is nearer the stud, it will engage setdown step in 10" selector lever first, assuring proper setdown point for 10" records.

If a 12" record is being changed, edge of record strikes arm, lifting positioning rod (24) clear of all three selector levers. In this position, stud on tone arm actuating lever (65) engages with setdown step in 12" selector lever first, positioning tone arm for 12" setdown point.

As main slide (68) continues moving toward spindle, one of the selector levers that has been positioned by the size record being changed (see the foregoing) engages stud on tone arm actuating lever (65), pushing tone arm in over turntable by pressure applied by tone arm positioning spring (64), until stud engages setdown step in lower selector assembly (90), stopping inward travel on tone arm. Tone arm is then lowered to lead-in groove of record as lift shaft (57) rides down cam surface (point B on Exploded View) on main slide (68).

As tone arm is lowered to record, stud on rear of main slide (68) contacts lower selector assembly (90) and pushed it back far enough to release setdown step from stud on tone arm actuating lever (65), permitting tone arm to ride freely across record.

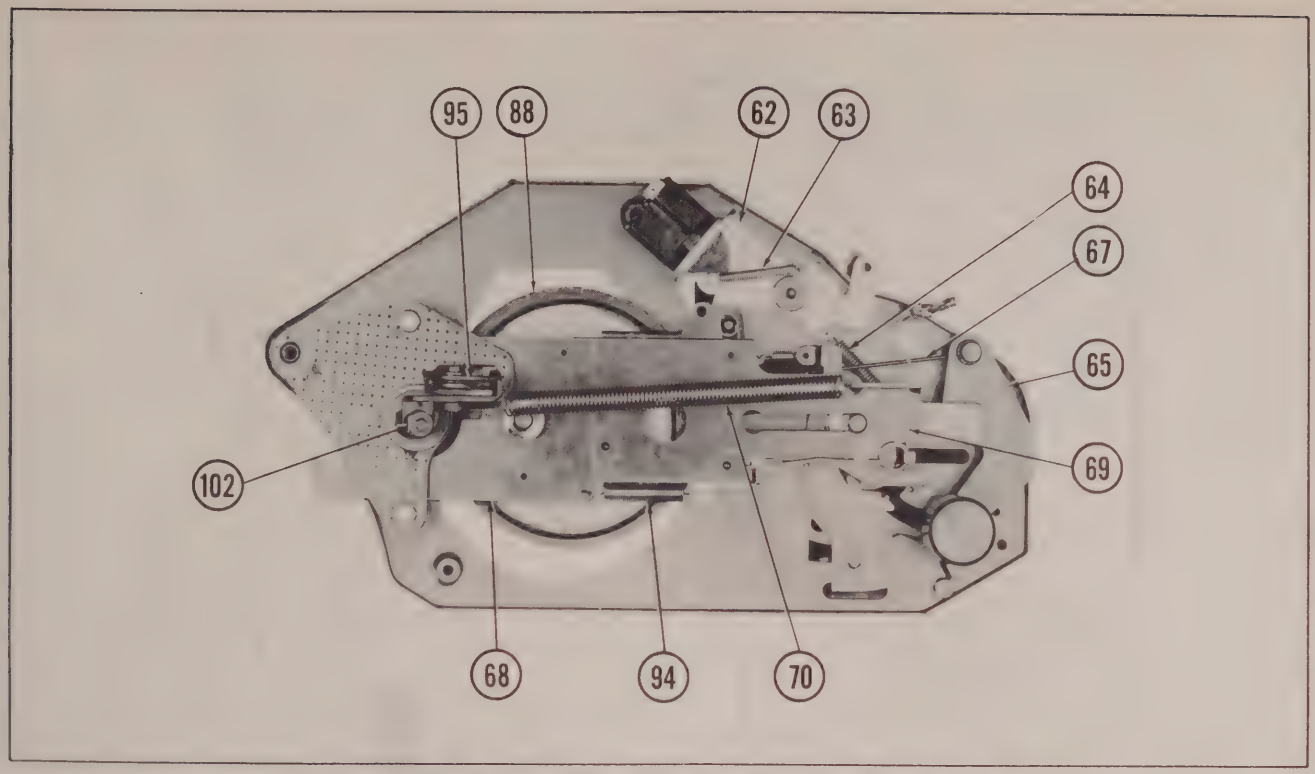


FIGURE 4. BOTTOM VIEW OF CYCLE MECHANISM

At this time, stud on rear of main slide (68) pushes locking arm (55), in turn moving locking lever (53) far enough to engage pin on lower selector assembly in the out-of-cycle position.

As main slide (68) nears the end of its travel, index pin on bottom of cam wheel (88) rides into detent of cam latch (68A), preventing cam wheel (88) from engaging with turntable hub until next change cycle is started.

As soon as last record has been dropped, pressure arm (1) drops below shelf on spindle assembly (4), and pressure arm shaft contacts shutoff lever on automatic shutoff assembly (108). After last record has finished playing, change cycle starts again. However, this time rest positioning lever (56) is pivoted inwardly due to automatic shutoff rod (97), which in turn was actuated by automatic shutoff spring (107) when pressure arm shaft contacted shutoff lever. As rest positioning lever (56) pivots inwardly, stud on bottom moves against cam surface on reject lever (68B), and tab at opposite end moves into path of stud on tone arm actuating lever (65). As tone arm swings outwardly from turntable, stud on tone arm actuating lever (65) contacts tab on rest positioning lever (56), stopping tone arm directly over tone arm rest, thereby preventing stud on tone arm actuating lever (65) from traveling far enough to unlock lower selector assembly (90). At this time, stud on rest positioning lever (56) has moved behind cam surface on reject lever (68B), and as main slide (68) moves forward, stud contacts cam surface from rear, forcing reject lever (68B) toward On-Off switch (62). Lift shaft (57) now rides down cam surface (point B on Exploded View) on main slide (68), lowering tone arm to arm rest. Simultaneously, reject lever (68B) contacts stud on On-Off switch (62), which in turn is moved far enough to shut off the switch.

OPERATION OF 45-RPM SPINDLE MECHANISM

Spindle (4) functions the same as it did before the 45-rpm spindle was placed on the changer. As spindle (4) is actuated, its ejector lever contacts and pushes actuator (124) on 45-rpm spindle. This causes separators (126) to move out, in turn pulling in separator bolts (127). As bolts recede, separator (126) mounted above bolts moves out, separating the lower record of a stack and supporting the remaining records, while the lower record drops to the turntable.

Ejector lever on spindle (4) then moves to its rest position, allowing actuator (124) on 45-rpm spindle to return with it by pressure of actuator spring (129), causing separators (126) to move in and separator bolt (127) to move out. This permits bottom record to drop from separators to the bolts.

TONE ARM HEIGHT ADJUSTMENT

To adjust tone arm height, turn height adjustment screw (13) clockwise to lower, counterclockwise to raise tone arm.

NOTE: Do not overadjust. The tone arm should just clear the bottom of the record stack when properly adjusted.

NEEDLE SETDOWN ADJUSTMENT

1. Setdown point of needle is adjusted by screw (17), accessible through a hole at the side of the tone arm.
2. Turning screw clockwise will move the needle toward the outer edge of the record, counterclockwise will move the needle toward the center of the record.

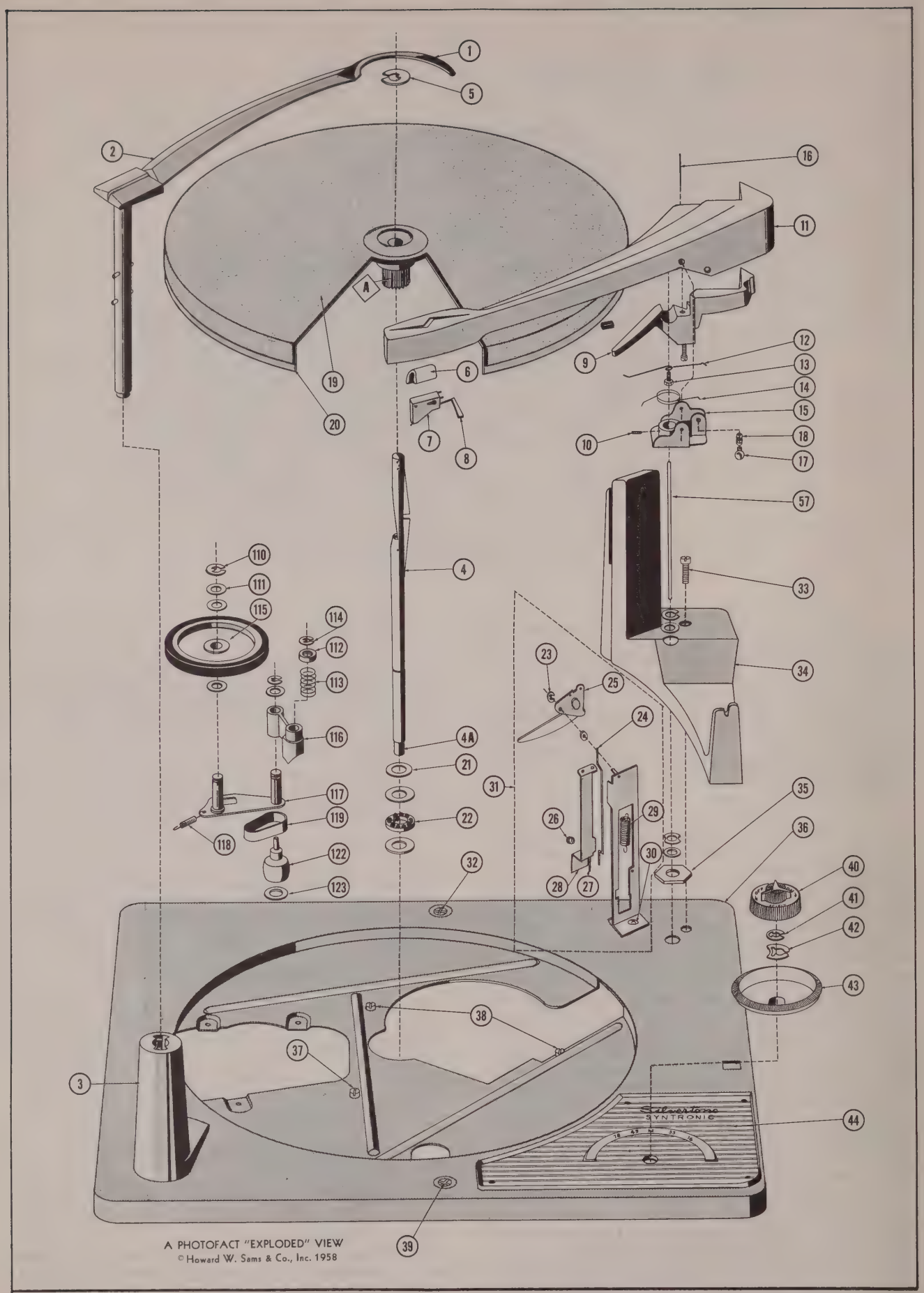


FIG. 5A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE

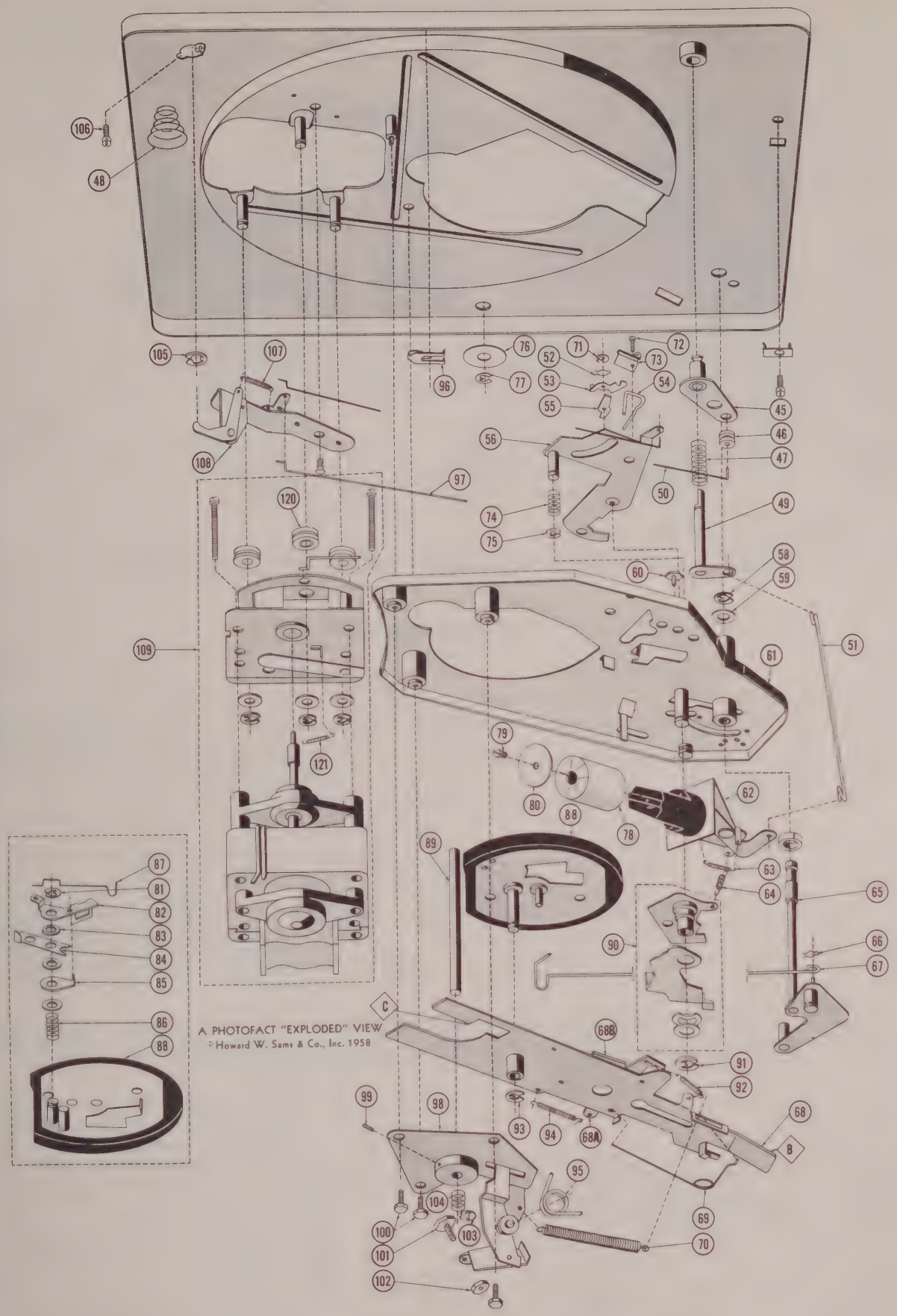


FIG. 5B EXPLODED VIEW OF PARTS BELOW BASEPLATE

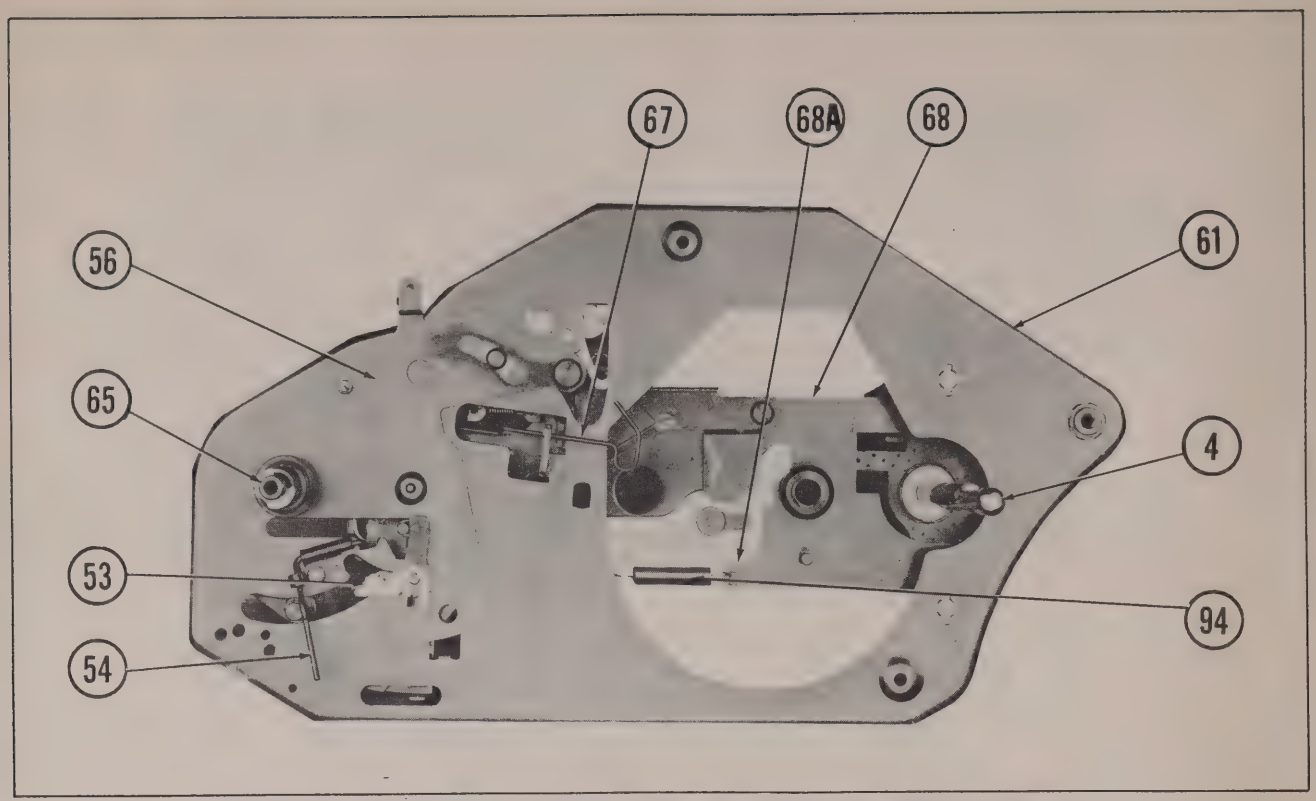


FIGURE 6. TOP VIEW OF CYCLE MECHANISM WITH CAM WHEEL REMOVED

TROUBLE CHART

Symptom	Cause	Remedy
Turntable does not revolve when control is turned to On.	1. No current at motor.	1 (a). Check to see if current is reaching AC leads of changer. (b). Check to see if switch is closing. (c). Check wiring and soldered terminals in the changer.
	2. Motor defective.	2. Remove turntable to allow motor to operate without load. If current is reaching motor and drive spindle does not rotate, the motor is defective; repair or replace.
	3. Drive wheel (115) not engaging turntable rim.	3 (a). Check to see if drive wheel assembly is free to contact the drive spindle and turntable rim. (b). Wipe any oil or foreign matter from inside rim of turntable (20). Clean the turntable rim and rubber tire of drive wheel (115) with naptha or alcohol.
Noise while record plays.	1. Motor rumble.	1. If a low-pitched rumbling sound comes from the loudspeaker while a record is being played, check motor grommets to be sure the motor is freely suspended on them. Motor lead wires should have slack to allow the motor to float. Motor rumble may also come from an unbalanced motor rotor; in this case, replace motor.

Symptom	Cause	Remedy
	2. Defective turntable ball bearing race (22).	2. Defective bearings can cause rumble. Check for foreign matter in the bearing, defective balls, binding between balls and ball retainer or rough surface on washers. Clean ball bearings, bearing race, and thrust washers (21); lubricate with light mineral oil.
	3. Defective drive wheel (115).	3. A rapid thumping sound while the motor is running may indicate a flat spot on drive wheel (115). If this condition does not clear up after ten minutes of running time, remove the turntable and check the rubber tire on the drive wheel. If the surface of the rubber tire is not smooth and even, replace.
Record does not drop when changer cycles.	1. Pushoff shaft (89) broken or bent.	1. Replace pushoff shaft (89).
	2. Adjustment screw (101) not adjusted properly.	2. Adjust adjustment screw (101) so that it actuates pushoff shaft (89) properly.
Needle does not set down on 10" record.	1. Tone arm not adjusted properly.	1. See "Adjustments". (Page 5)
	2. Lower selector assembly (90), and upper selector assembly (31) not operating properly.	2. Check for binding and foreign matter in lower selector (90), and in upper selector assembly (31).
Changer does not shut off after last record has been played.	1. Pressure arm (1) binding.	1. Pressure arm (1) must drop below the offset shoulder of the spindle (4) or the changer will not shut off.
	2. Automatic shutoff assembly (108) binding.	2. Clean out any foreign matter and make sure it functions freely.
	3. Automatic shutoff rod (97) loose.	3. Replace.
No sound while playing.	1. Defective cartridge.	1. Replace.
	2. Defective wiring.	2. Check pickup leads for shorted or open lead.
	3. Defective amplifier.	3. Check phonograph amplifier and speaker.
	4. Loose cartridge terminal clips.	4. Remove, squeeze together slightly and replace.
Changer does not cycle when the control knob is turned to Reject.	1. Manual reject not actuating the trip.	1 (a). Turn Off-On-Reject knob (40) to Reject position and hold; see if Off-On switch (62) actuates reject lever (68B). Reject lever then pushes cam wheel (88), thereby starting the change cycle.
		(b). Check for binding Off-On switch (62) and reject lever (68B). If binding occurs, remove foreign matter and check for freedom of parts.

Ref. No.	Part No.	Description
1	84-4355	† Pressure Arm
	84-4571	Pressure Arm (Used in Chassis 528. 56220, 221, 230, 231
	84-3864	Pressure Arm (Used in Chassis 528. 56100, 101, 102, 103, 104, 105, 106, 116, 117)
	84-6327	Pressure Arm (Used in Chassis 528. 156300, 310)
2	21-200-0	Pressure Arm Cap (Used in all Versions Except 528. 56300, 310)
3	21-38-1	Pressure Arm Housing
4	84-3872	Spindle Assembly
5	22-34-1	Retainer "C" Washer
6	37-8-1	Cartridge Pad
7	33-235-0	† Cartridge (2T-LB)
	33-286-0	Cartridge (3T-LB Used in Chassis 528. 56160, 170, 220, 221, 230, 231, 250, 251)
8	83-1172	† Needle
	83-1178	Needle (Used in Chassis 528. 56160, 170, 220, 221, 230, 231, 250, 251)
9	83-1151	† Counter Balance Weight
	83-1166	Counter Balance Weight (Used in Chassis 528. 56160, 170, 220, 221, 230, 231, 240, 241, 250, 251)
	83-1210	Counter Balance Weight (Used in Chassis 528. 56300, 310)
10	97-619	Set Screw, 8-32 x 3/16"
11	33-300-7	† Tone Arm
	33-308-7	Tone Arm (Used in Chassis 528. 56230, 231, 250, 251)
	84-6652	Tone Arm (Used in Chassis 528. 56300, 310)
	33-299-7	Tone Arm (Used in Chassis 528. 56100, 101, 102, 103, 104, 105, 116, 117, 220, 221, 240, 241)
12	70-302-0	† Height Adjustment Spring
	70-339-0	Height Adjustment Spring (Used in Chassis 528. 56300, 310)
13	97-615	Height Adjustment Screw
14	70-286-0	Pivot Spring
15	84-3917	† Tone Arm Hinge Assembly
	84-6652	Tone Arm Hinge Assembly (Used in Chassis 528. 56300, 310)
16	22-44-5	† Pivot Pin
		Pivot Pin (Used in Chassis 528. 56220, 221, 230, 231, 240, 250, 251)
17	97-611	Setdown Screw, # 6-40 x 1/4"
18	70-288-0	Friction Spring
19	62-88-0	† Boot for Turntable (Black)
	62-103-0	Boot for Turntable (Used in Chassis528. 56220, 221, 230, 231, 240, 241)
20	84-3874	† Turntable
	84-4061	Turntable (Used in Chassis 528. 56102, 104, 105, 106, 114, 117, 122, 124, 125, 134, 135, 136, 260, 261, 270, 271, 300, 310)
	84-4397	Turntable (Used in Chassis 528. 56220, 221, 230, 231, 240, 241 250, 251)
21	86-340	† Thrust Washer
	86-255	Thrust Washer (Used in Chassis 528. 56100, 101, 103, 106, 110, 111, 112, 113, 115, 120, 121, 122, 123, 130, 131, 132, 133, 160, 170)

Ref. No.	Part No.	Description
22	26-3-0	Ball Bearing Race (Not used in all Chassis)
23	22-44-1	Retainer, "C" Washer
24	39-36-3	Positioning Rod
25	84-3920	Selector Arm & Swivel
26	70-301-0	Spring, Clutch Compression
27	39-31-3	Lift Rod
28	22-51-4	Friction Slide
29	70-300-0	Spring, Friction Slide Return
30	57-803211	Screw, #8-32 x 3/16"
31	84-3923	Upper Selector Assembly (Inc. 23 thru 30)
32	95-544	† Mounting Screw, Rear
	97-640	Mounting Screw, Rear (Used in Chassis 101, 111, 113, 121, 123, 131, 133)
33	57-810217	Screw #8-32 x 5/8"
34	21-36-1	Selector Housing
35	56-248	Palnut
36		Motorboard
37	97-575	Screw, #8-32 x 1/4"
38	57-804277	Screw, #8-32 x 1/4"(2)
39	97-545	† Mounting Screw, Front
		Mounting Screw, Front (Used in Chassis 101, 111, 113, 121, 123, 131, 133)
40	84-4280	† Knob, Off-On-Reject
	84-4568	Knob, Off-On-Reject (Used in Chassis 528. 56220, 221, 230, 231, 240, 241, 250, 251)
	52-919-0	Knob, Off-On-Reject (Used in Chassis 528. 56260, 261, 270, 271)
	52-1122-0	Knob, Off-On-Reject (Used in Chassis 528. 56300, 310)
41	22-57-1	Retainer, "C" Washer
42	22-67-1	Retainer, "C" Washer
43	52-917-0	Speed Control Knob
44	40-15	† Escutcheon
	40-89-0	Escutcheon (Used in Chassis 528. 56220, 221, 230, 231, 240, 241, 250, 251)
	40-109-0	Escutcheon (Used in Chassis 528. 56260, 261, 270, 271)
	40-129-0	Escutcheon (Used in Chassis 528. 56300, 310)
45	84-3952	Speed Shaft & Lever
46	37-113-3	Grommet
47	70-283-0	Spring, Anti Rattle
48	70-284-0	Mounting Spring (3)
49	84-4052	Off-On-Shaft and Lever
50	39-26-3	Speed Control Rod (Long)
51	39-24-3	Shut Off Rod (Short)
52	70-296-0	† Retainer Spring
	22-117-0	Retainer Spring (Used in Chassis 528. 56100, 101, 110, 111, 120, 212, 130, 131)
53	22-32-4	Locking Lever
54	39-35-3	Lift Rod
55	22-52-4	Locking Arm
56	84-4350	† Lever, Rest Positioning
	22-39-4	Lever, Rest Positioning (Used in Chassis 528. 56100, 101, 102, 110, 111, 112, 113, 114, 120, 121, 122, 123, 130, 131, 132, 133, 134, 160, 170)
57	39-30-3	† Lift Shaft
	84-3918	Lift Shaft (Used in Chassis 528. 56120, 121, 122, 123, 130, 131, 132, 133)

Ref. No.	Part No.	Description
	84-3915	Lift Shaft (Used in Chassis 528. 56300, 310)
58	22-69-1	Retainer "C" Washer
59	86-329	Thrust Washer
60	97-264	† Screw, #6-32 x 3/16"
	97-613	Screw, #6-32 x 3/16" (Used in Chassis 528. 56160, 170, 220, 221, 230, 231, 240, 241, 250, 251, 260, 261, 270, 271, 300, 310)
61		Sub Baseplate
62	84-4160	Off-On-Switch
63	70-247-0	Spring, Off-On-Switch
64		Spring, Tone Arm Positioning
65	84-3801	† Lever, Tone Arm Actuating
	84-4134	Lever, Tone Arm Actuating (Used in Chassis 528. 56160, 170, 120, 121, 130, 131, 140, 141, 150, 151)
	84-6339	Lever, Tone Arm Actuating (Used in Chassis 528. 56300, 310)
66	22-70-1	Hairpin Retainer
67	39-25-3	Push Trip Rod (Long)
68	84-4059	† Main Slide
	84-6697	Main Slide (Used in Chassis 528. 56300, 310)
69	70-292-0	Spring, Actuating Lever Return
	70-341-0	Spring, Actuating Lever Return (Used in Chassis 528. 56300, 310)
70	70-291-0	Spring, Slide Return
71	22-74-1	Retainer "C" Washer (Not used in all Chassis)
72	57-402211	Screw, # 4-40 x 1/ 8"
73	22-70-3	Clamp, Lift Rod
74	70-290-0	Spring, Saftey Index (Not used in all Chassis)
75	22-44-1	Retainer, "C" Washer (Not used in all Chassis)
76	86-331	Flatwasher, Special Mounting
77	22-72-1	Retainer, "C" Washer
78	21-63-1	† Switch Cover
	21-33-1	Switch Cover (Used in Chassis 528. 56260, 261, 270, 271)
79	57-406169	† Screw, #4-24 x 3/ 8"
	57-407169	Screw, #4-24 x 7/ 16" (Used in Chassis 528. 56300, 310)
80	86-327	Fibre Washer
81	22-68-1	*Retainer, "C" Washer
82	22-42-4	*Pawl Locator
83	86-328	*Thrust Washer (3)
84	22-86-4	*Trip Pawl
85	29-123-1	*Clutch Arm
86	70-294-0	*Clutch Spring
87	39-23-3	*Push Trip Rod (Short)
88	84-3883	† Cam Wheel
	84-4937	Cam Wheel (Used in Chassis 528. 56105, 106, 116, 125, 136, 221, 231, 241, 251, 261, 271)
	84-4938	Cam Wheel (Used in Chassis 528. 56300, 310)
89	39-28-3	Push Off Shaft
90	84-3875	Lower Selector Assembly
91	22-57-1	Retainer, "C" Washer
92	70-293-0	Spring, Reject Lever
93	22-57-1	Retainer, "C" Washer
94	70-242-0	Spring, Cam Latch

Ref. No.	Part No.	Description
95	70-289-0	Spring, Push Off Lever
96	22-65-1	Retainer Clip, Mounting Screw
97	39-32-3	Rod, Automatic Shutoff
98	84-4361	Bracket Spindle Mounting
99	97-619	Set Screw, #8-32 x 3/16" (2)
100	97-575	Screw, #8-32 x 1 / 4" (3)
101	97-607	Adjustment Screw
102	56-245	Hex Nut #8-32
103	22-56-1	Retainer, "C" Washer (4)
104	70-285-0	Spring, Push Off Shaft
105	22-105-1	Retainer "C" Washer
106	57-806285	Screw, #8-18 x 3/ 8" (2)
107	70-280-0	Spring, Automatic Shutoff
108	84-3873	Automatic Shutoff Assembly
109	59-72	Motor Complete (Used in Chassis 528. 56100, 101, 102, 103, 104, 105, 106, 120, 121, 122, 123, 125, 160, 260, 261, 300)
110	86-348	Retainer "C" Washer
111	86-346	Fibre Washer
112	86-343	Cup Washer
113	70-313-0	Follower Spring
114	86-348	Retainer "C" Washer
115	39-13-0	Drive Wheel
116	22-29-4	Follower Link
117	22-64-4	Lever, Drive Tension
118	70-315-0	Spring, Drive Tension
119	83-1167	Motor Drive Belt
120	37-7-3	Grommet, Motor Mounting(3)
121	70-319-0	Index Spring
122	39-18-0	Speed Adaptor
123	86-374	Felt Washer
109	59-89	Motor Complete (Used in Chassis 528. 56110, 111, 112, 113, 114, 115, 116, 117, 130, 131, 132, 133, 134, 135, 136, 170, 270, 271, 310)
110	22-101-1	Retainer "C" Washer
111	86-347	Fibre Washer
112	86-344	Cup Washer
113	70-314-0	Follower Spring
114	86-345	Retainer "C" Washer
115	39-14-0	Drive Wheel
116	22-304	Link Follower
117		Lever, Drive Tension
118	70-316-0	Spring, Drive Tension
119	83-1163	Motor Drive Belt
120	37-8-3	Grommet, Motor Mounting (3)
121	70-320-0	Index Spring
122		Speed Adaptor
123		Felt Washer
109	59-98	Motor Complete (Used in Chassis 528. 56230, 231, 250, 251)
110	22-101-1	Hairpin Retainer
111	86-347	Fibre Washer
112	86-344	Cup Washer
113	70-314-0	Follower Spring

SILVERTONE CHASSIS 528.56100 thru 106, 528.56110 thru 117, 528.56120 thru 125, 528.56130 thru 136, 528.56160, 170, 220, 221, 230, 231, 240, 241, 250, 251, 260, 261, 270, 271, 300, 310

FOLDER 10

MECHANICAL PARTS LIST (CON'T)

Ref. No.	Part No.	Description
114	86-345	Retainer, "C" Washer
115	39-14-0	Drive Wheel
116	22-30-4	Follower Link
117	22-67-4	Lever, Drive Tension
118	70-316-0	Spring, Drive Tension
119	83-1168	Motor Drive Belt
120	37-8-3	Grommet, Motor Mounting(3)
121	70-320-0	Index Spring
122	39-19-0	Speed Adaptor
123	86-374	Felt Washer
109	59-97	Motor Complete (Used in Chassis 528. 56220, 221, 240, 241)
110	86-348	Retainer "C" Washer
111	86-346	Fibre Washer
112	86-343	Cup Washer
113	70-313-0	Follower Spring
114	86-348	Retainer "C" Washer

Ref. No.	Part No.	Description
115	39-13-0	Drive Wheel
116	22-29-4	Link Follower
117	22-66-4	Lever, Drive Tension
118	70-315-0	Spring, Drive Tension
119	83-1167	Motor Drive Belt
120	37-7-3	Grommet, Motor Mounting(3)
121	70-319-0	Index Spring
122	39-18-0	Speed Adaptor
123	86-374	Felt Washer
124	84-4086	Actuator
125	21-199-02	Spindle Nose
126	22-55-4	Separator (2)
127	22-56-4	Separator Bolts (2)
128	70-305-0	Separator Spring
129	70-306-0	Actuator Spring
130	21-39-12	Spindle Housing
131		#4-24 x 1 1/ 8" Phillips (2)
132	29-3-02	Record Locator
133	21-136-0	Retainer Ring

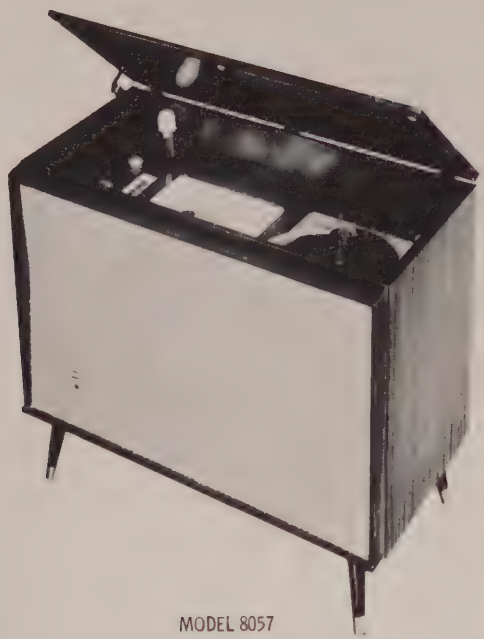
† Parts used in Chassis not designated.
* These parts are available as a kit.
Order Part No. 84-4408
Parts with no designations are used in all chassis.

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE CHASSIS 528.53050, 528.53051, 528.53131, 528.53340

SILVERTONE CHASSIS 528.53050, 528.53051, 528.53131, 528.53340



MODEL 8057

TRADE NAME	Silvertone	Models	Radio Chassis
		8044, 8045, 8046 8052, 8053, 8054	528. 53050
		8044A, 8045A, 8046A 8053, 8054	528. 53051
		8057, 8058	528. 53130 (or) 528. 53131
		9053, 9054	528. 53340
SUPPLIER	Sears, Roebuck & Co., 920 S. Homan Ave., Chicago, Illinois		
TYPE SET	AC Operated AM Receiver With 4 Speed Automatic Record Changer (Models 8057, 8058 Also Include Tape Recorder)		
TUBES (Six)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12CR6 Det.-AVC-AF Amp., 12BF6 Phase Inv., (2) 35C5 Output		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	.37 Amp. @ 117 Volts AC (36 Watts Less Phono and Tape)
TUNING RANGE - BROADCAST 535 - 1620KC			

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SILVERTONE 528. 56000 SERIES - PHOTOFACT SET 417 FOLDER 10

FOR SERVICE INFORMATION ON TAPE TRANSPORT - SEE SILVERTONE 528. 58000 - PHOTOFACT SET 417 FOLDER 12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

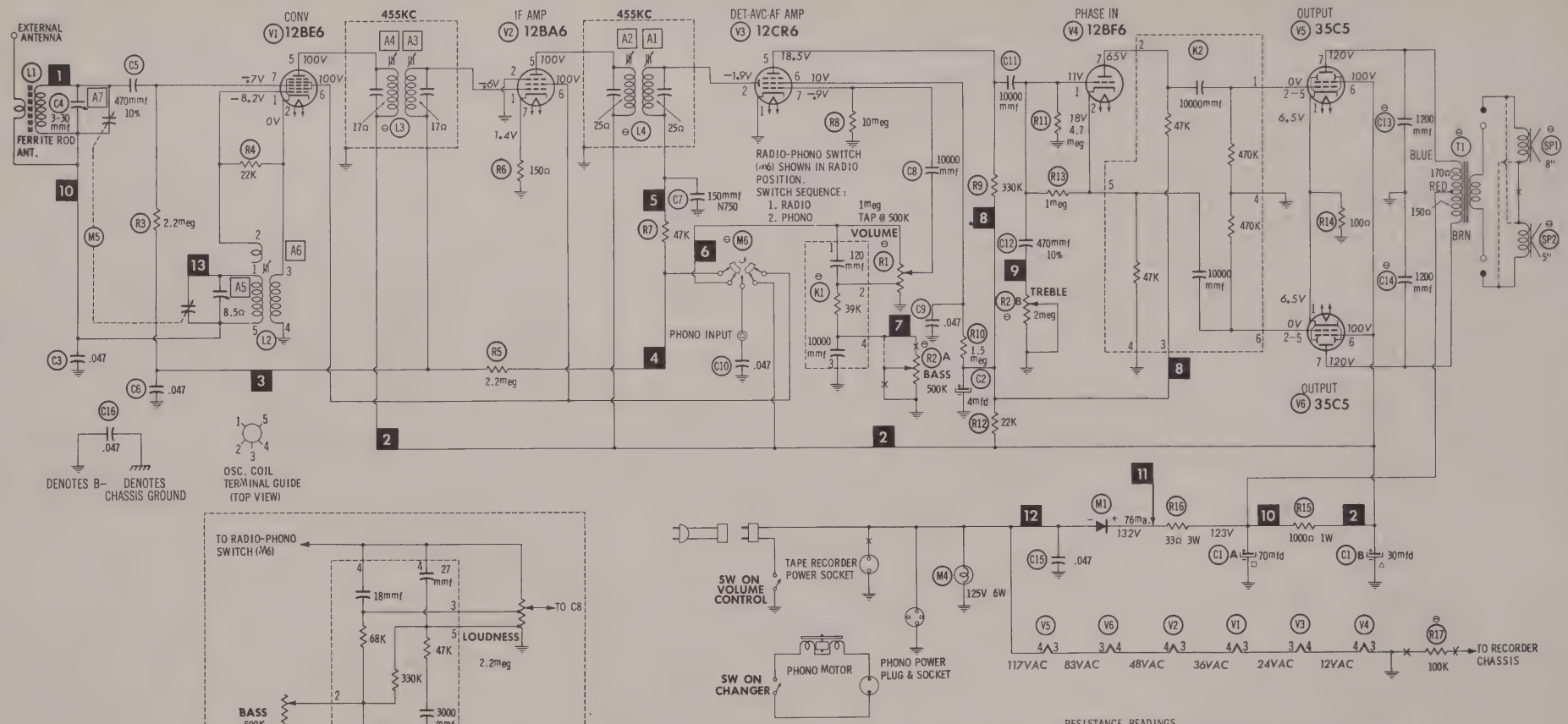
Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

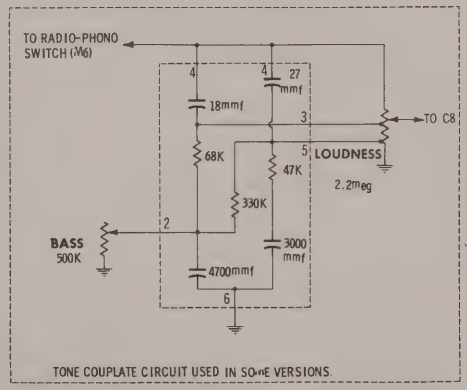
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output whil rocking tuning gang. Repeat steps 2 and 3.
4.		"	1500KC	Tune to 1500KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H677

SET 417 FOLDER 11





TONE COUPLATE CIRCUIT USED IN SOME VERSIONS.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	24Ω	36Ω	†1000Ω	†1000Ω	5.4meg
V2	12BA6	3.2meg	0Ω	36Ω	48Ω	†1000Ω	†1000Ω	150Ω
V3	12CR6	0Ω	1meg	24Ω	12Ω	†350K	†1.5meg	10meg
V4	12BF6	850K	47K	0Ω	12Ω	0Ω	0Ω	†70K
V5	35C5	100Ω	470K	83Ω	100Ω	470K	†1000Ω	†203Ω
V6	35C5	100Ω	470K	83Ω	48Ω	470K	†1000Ω	†183Ω

† MEASURED FROM OUTPUT OF M1

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE* *TRADE MARK

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12CR6	
V4	Phase Inverter	12BF6	
V5	Output	35C5	
V6	Output	35C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■70	150	18-58-5	AFH2-17-50	BBRD8415	PFP214.3	TDLD-10	MTD-303	R2686 *
B	▲30	150							
C2	4	150	18-62-5	PRS150V4	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1402

* Non-Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.047	400	20-44-1	P488N-047	DF-503	BC4S47J	ACE6147	4SE-S47	
C4	3-30		19-180-0						
C5	470		15-47111		MD-471				10%
C6	.047	200	20-47-1	P288N-047	DF-503	BC2S47J	ACE6147	2SE-S47	
C7	150		15-151164	N750-DI 150	DTN-150	C10T15U		5TCU-T15	N750
C8	10000		15-10317	BPD-01	DD-103	BYA10G1	DC511	5HK-S1	
C9	.047	200	20-47-1	P288N-047	DF-503	BC2S47J	ACE6147	2SE-S47	
C10	.047	400	20-44-1	P488N-047	DF-503	BC4S47J	ACE6147	4SE-S47	
C11	10000		15-10317	BPD-01	DD-103	BYA10G1	DC511	5HK-S1	
C12	470		15-47111		MD-471				10%
C13	1200			DI 1200	DD-122	L10D12	UC-5212	5GA-D12	①
C14	1200			DI 1200	DD-122	L10D12	UC-5212	5GA-D12	①
C15	.047	400	20-55-1	P488N-047	DF-503	BC4S47J	ACE6147	4SE-S47	
C16	.047	400	20-44-1	P488N-047	DF-503	BC4S47J	ACE6147	4SE-S47	

① Some versions may use 1000mmf in this application (Part #15-10216).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	24-277-0	BT-71	A47F5-1meg	Q19-137X	UT-443	Volume, Tap ① 500K Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	UB-26	
R2A	500K	½	24-148-2	F1-41				Bass Note 2
B	3meg	½		R2-79			■ UE3838	Treble

* Use KR with CRL "Red Label" Controls and KB with "Blue Label" Controls.
■ STA-LOC Equivalent FC55A, OS1875, RU36A, IS2312
Note 1. Alternate Part #24-329-0 used in Chassis 528.53340.
Note 2. Alternate Part #24-168-2 used in Chassis528.53340.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R3	2.2meg		60-22502	
R4	22K		60-22301	
R5	2.2meg		60-22502	
R6	150Ω		60-15101	
R7	47K		60-47302	
R8	10meg		60-10601	
R9	330K		60-33401	
R10	1.5meg		60-15501	
R11	4.7meg		60-47501	
R12	22K		60-22301	
R13	1meg		60-10501	
R14	100Ω		60-10101	
R15	1000Ω	1	60-10211	
R16	33Ω	3(WW)	61-10-0	
R17	100K		60-10401	Note 1

Note 1. Not used in some versions.

PRINTED BOARD

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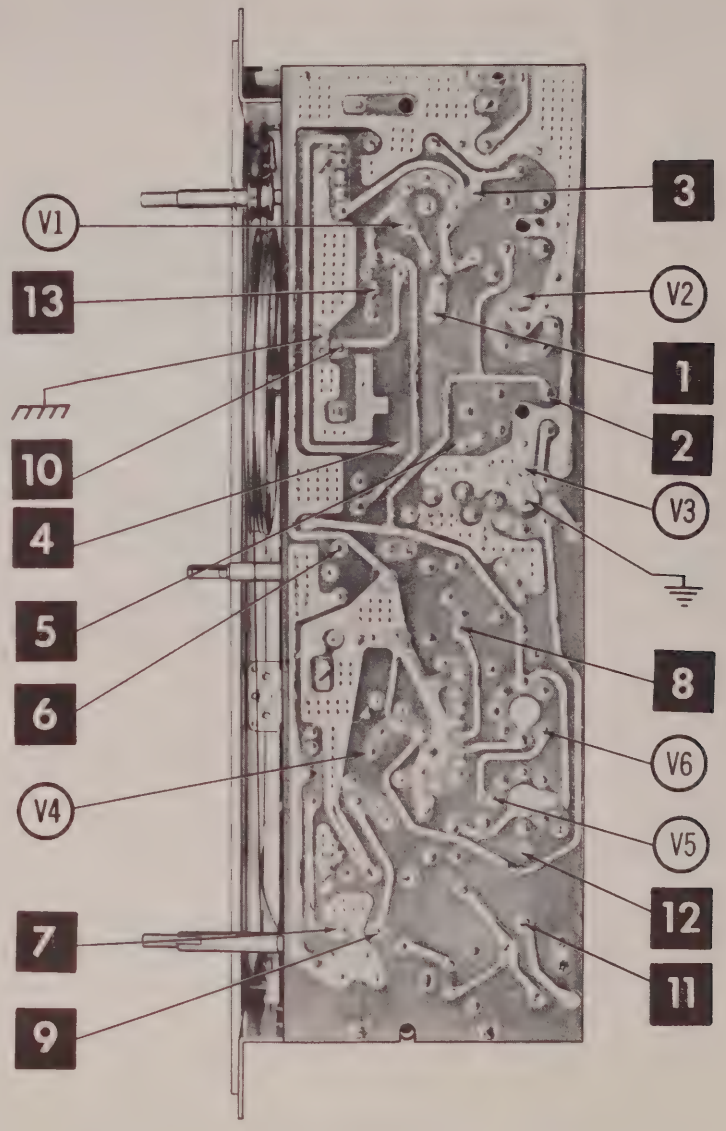
*TRADE MARK

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

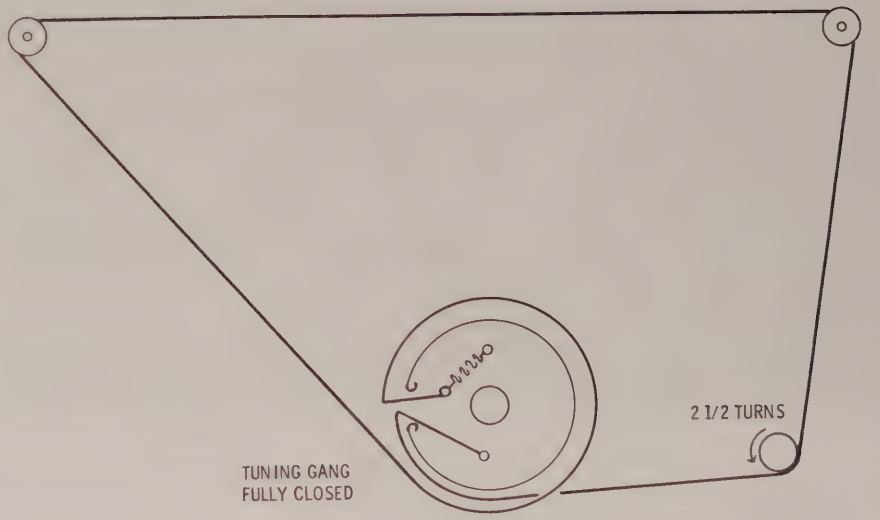
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	40-3-5	Dial Scale, Models 8057, 8058
Knob	52-837-0	Tuning, Bass
Knob	52-808-0	Radio-Phono-Tape
Knob	52-839-0	Radio-Phono, Treble
Knob	52-840-0	On-Off, Loudness
Pointer	52-7-1	Model 8057
Pointer	52-6-1	Models 8044, 8045, 8045A, 8046, 8046A, 8052, 8053, 8054
Pointer	52-58-1	Models 9053, 9054
Dial Scale	48-141-1	Model 8057, 8058
Dial Scale	48-139-1	Models 8045A, 8046A, 8053, 8054, 8044, 8044A, 8045, 8046, 8052
Leg	49-177	Four used, Model 8057
Leg	49-178	Four used, Model 8058
Leg	49-161	Four used, Model 8053, 8054
Leg	49-301	Four used, Model 9053
Leg	49-302	Four used, Model 9054
Cabinet	42-15-3	Mahogany, Model 8057
Cabinet	42-16-3	Limed Oak, Model 8058
Cabinet	42-11-3	Mahogany, Model 8045
Cabinet	42-12-3	Limed Oak, Model 8046
Cabinet	42-9-3	Mahogany, Model 8053
Cabinet	42-10-3	Limed Oak, Model 8054
Cabinet	42-46-3	Walnut, Model 8044
Cabinet	42-48-3	Walnut, Model 8052
Cabinet	42-50-3	Mahogany, Model 8045A
Cabinet	42-51-3	Limed Oak, Model 8046A
Cabinet	42-60-3	Mahogany, Model 9053
Cabinet	42-61-3	Limed Oak, Model 9054
Cabinet	42-54-3	Walnut, Model 8044A

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

DIAL CORD STRINGING



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	82-126-0	14-9003				Includes C4
L2	Osc. Coil	10-34-4					
L3	Input IF	10-96-2	16-6780	BC-356	13-PC9	RF-4	Note 1
	Input IF	10-81-2	16-6780	BC-356	13-PC9	RF-4	Note 2
L4	Output IF	10-97-2	16-6780	BC-357	13-PC10	RF-4	Note 1
	Output IF	10-71-2	16-6780	BC-357	13-PC10	RF-4	Note 2

Note 1. Used in 528. 53130 and 528. 53131

Note 2. Used in 528. 53340, 528. 53050, and 528. 53051

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5600Ω CT	1-2Ω	80-33-1	Z1001	A-2928	AU-608	A-3850			Note 1

Note 1. Part #80-16-1 used in Chassis 528. 53340, 528. 53050, 528. 53051

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	33-254-4 ①	8A21	① Used in Models 8057, 8058, 9053, 9054
SP2	5"	PM	3-4Ω	33-258-4 ②	5A1R	② Used in Models 8057, 8058
	6"	PM	3-4Ω	33-291-4 ③		③ Two used in Models 8044, 8044A, 8045, 8045A, 8046, & 8046A
	6"	PM	3-4Ω	33-292-4 ④		④ Two used in Models 8052, 8053, 8054
	4"	PM	3-4Ω	33-281-4 ⑤		⑤ Two used in Models 9053, 9054

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Tone Comp.	120mmf, 10000mmf, 39K	13-13-5 ①	① Part #13-18-3 used in Chassis 528. 53340
K2	Audio Couplate	10000mmf, 10000mmf, 47K, 47K, 470K, 470K	13-16-3	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SILVERTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.076A	83-1146	1234AH	T100	100A K200 ①	① Silicon

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	33-235-0	53-T	GD-J			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

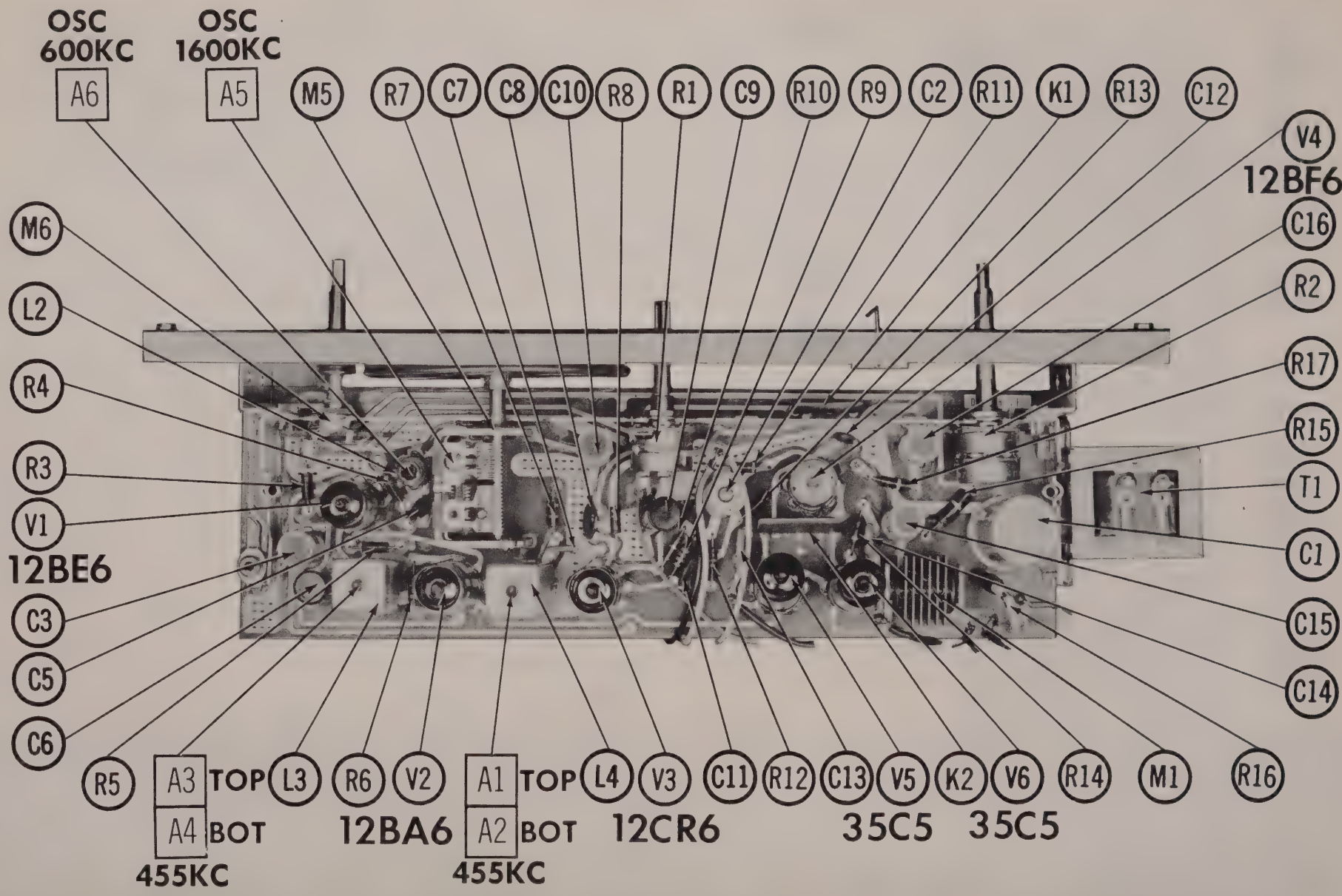
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M3	83-1172	† S-66 or †♦ S-66SD or ♦ S-66D	† W-75TPS or †♦ W-75DS or ♦ W-75TPD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Lamp	89-20	125 Volts 6 Watts
M5	Tuning Cap.	19-61-2	2 Gang
M6	Switch	69-247-0	Radio-Phono, Rotary, Wafer Type (Not used in Ch. 528. 53340)
	Switch	69-265-0	Radio-Phono, Rotary, Wafer Type Chassis 528. 53340
	Switch	69-236-0	Radio-Tape
	Printed Board	D-25-8-IF	



CHASSIS TOP VIEW

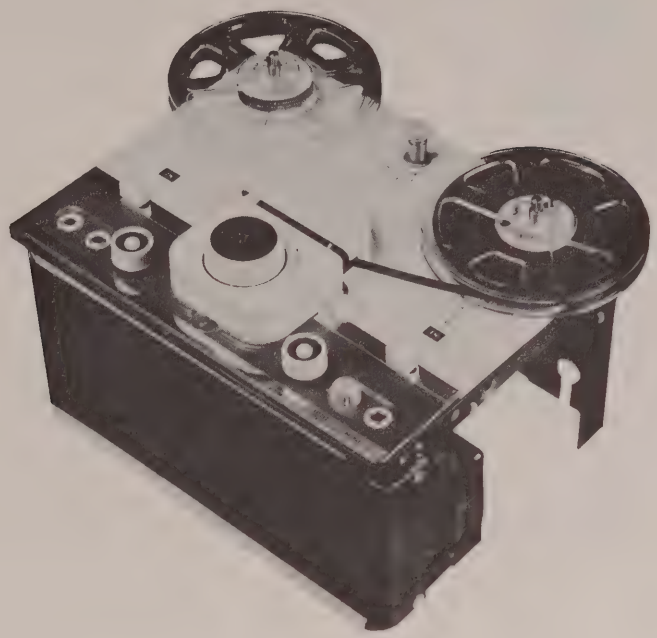
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE CHASSIS 528.58000, 528.58001, 528.59000, 528.59001

SILVERTONE CHASSIS 528.58000, 528.58001, 528.59000, 528.59001



SILVERTONE CHASSIS 528.58000, 528.58001, 528.59000, 528.59001

GENERAL INFORMATION

Silvertone tape transports 528.58000 and 528.58001 with amplifier chassis 528.59000 and 528.59001 record and play back two tracks of material on standard-width recording tape. This tape doubles the recording and playback time without loss of quality or frequency response. Recordings can be made from a phonograph, radio, or television receiver, in addition to those made directly from the microphone.

These recorders use type A recording tape and have two speeds, 3 3/4 and 7 1/2 ips. Using both tracks, recording time is as follows:

Reel Size	3 3/4" Speed	7 1/2" Speed
5" (600 ft.)	1 hour	1/2 hour
7" (1200 ft.)	2 hours	1 hour

These units operate on a 60-cycle, 105-125-volt AC supply only.

Supplied by:

Sears, Roebuck & Company
925 South Homan Avenue
Chicago 7, Illinois

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HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

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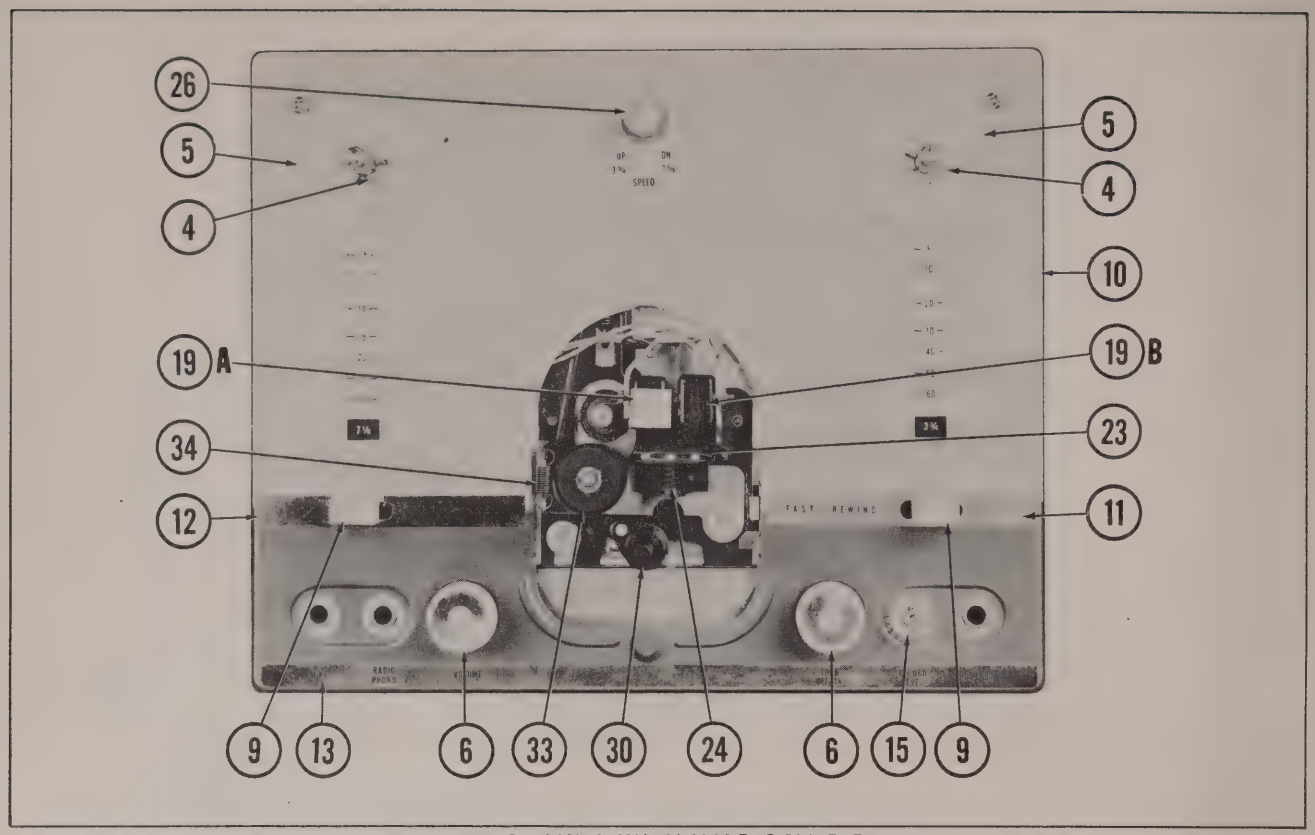


FIGURE 1. TOP VIEW WITH HEAD COVER REMOVED

OPERATING INSTRUCTIONS

Speed Control

When Speed control (26) is in Up position, the recorder is set for 3 3/4 ips; when Speed control (26) is in Down position, the recorder is set for 7 1/2 ips.

CAUTION: Do not operate this control unless unit is on.

Threading Tape

1. Place a full reel of tape on right reel plate (5) and an empty reel on left reel plate (5), making certain reel slots engage pins on reel plates.
2. Turn tape drive knob (1) fully counterclockwise.
3. Unwind about 10" of tape from reel. Hold a section of tape taut with both hands and insert in tape slot, making sure dull-coated side faces rear of recorder.
4. Insert end of tape into one of three radial slots in hub of take-up reel. Turn reel clockwise several turns until tape is secured to reel and all slack is taken up between reels.

To Record from Microphone

1. Turn on recorder by rotating On-Off-Tone control to right.
2. Insert microphone plug into Mike jack.
3. Adjust Speed control knob (26) for desired speed.
4. Depress Tape Drive knob (1) and turn clockwise until it locks.
5. Hold microphone about 6" to 12" away from mouth and speak in a normal voice. Adjust volume control until record level indicator flashes on loudest sound.

NOTE: Correct volume level on recording is extremely important. Too weak a signal, which does not cause flashing on the recording level indicator, results in weak playback and high background noise. Too strong a signal results in distortion during playback.

To Record from Radio or Television Receiver

1. Place microphone about 6" to 12" in front of radio speaker. Turn radio volume control to a normal level. Turn radio tone control to treble. Set recording level and record as described under "To Record from Microphone."
2. Make a shielded cable with a two-conductor plug on one end and two alligator clips on the other. Connect alligator clips across voice-coil terminals of radio or television speaker and insert plug into Radio-Phono jack. Set radio volume and tone controls as described in Step 1. Set recording level and proceed as described under "To Record from Microphone."

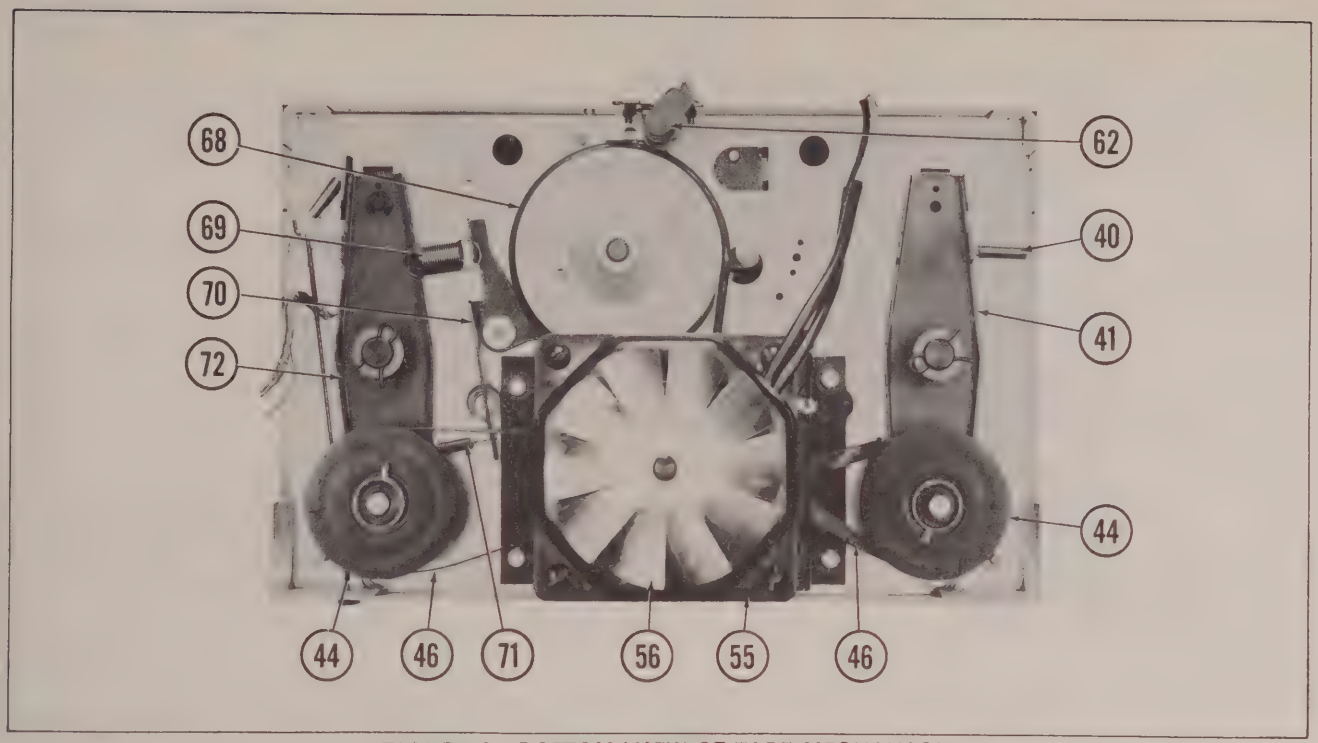


FIGURE 2. BOTTOM VIEW OF TAPE MECHANISM

3. Make a shielded cable with a two-conductor plug on one end and connect other end across radio volume control. Insert phone plug in Radio-Phono jack. Set recording level and proceed as described under "To Record from Microphone." Radio volume and tone controls have no effect on this setup and may be left in any position.

To Record from a Phonograph

1. If the phonograph being used has a phone-type plug on the pickup leads, insert this plug into Radio-Phono jack. Set recording level and and proceed as described under "To Record from Microphone."

2. If phonograph has a standard pin-type plug, an adapter is needed. Insert pin plug into adapter and plug adapter into Radio-Phono jack. Proceed as described under "To Record from Microphone." (Page 2, column 1)

Dual-Track Recording

This recorder will record and play back one-half the width of the tape at a time, giving a two-track recording. To record on the other half, remove full reel from take-up (left) side, turn reel over, and place on feed (right) side. When playing back or recording, the reels may be stopped and reversed at any point in order to use the other track.

Fast Forward and Fast Rewind

For high-speed forward or rewind, press either the fast forward or fast rewind knob (9) toward head cover. This rapidly winds the tape onto the desired reel as long as the knob is held in this position.

NOTE: Do not attempt fast forward or fast rewind with tape drive control on any setting except neutral, as unit may be damaged or tape may be torn.

Braking

To stop tape at any time while operating on fast forward or fast rewind, release fast forward or fast rewind control, and automatic braking mechanism will stop tape.

To Play a Recording

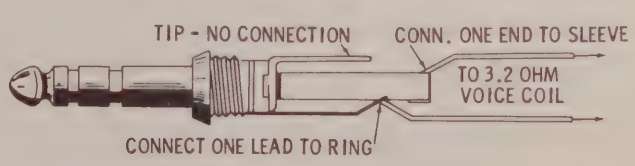
1. Thread tape as described under "Threading Tape." (Page 2, column 1)

2. Turn tape drive knob (1) clockwise without depressing until it locks.

3. Adjust volume and Off-On-Tone knob (6) to desired listening level.

To Use an External Speaker

Plug external speaker through a three-conductor plug into the output jack. Connect the three-conductor plug as shown below:



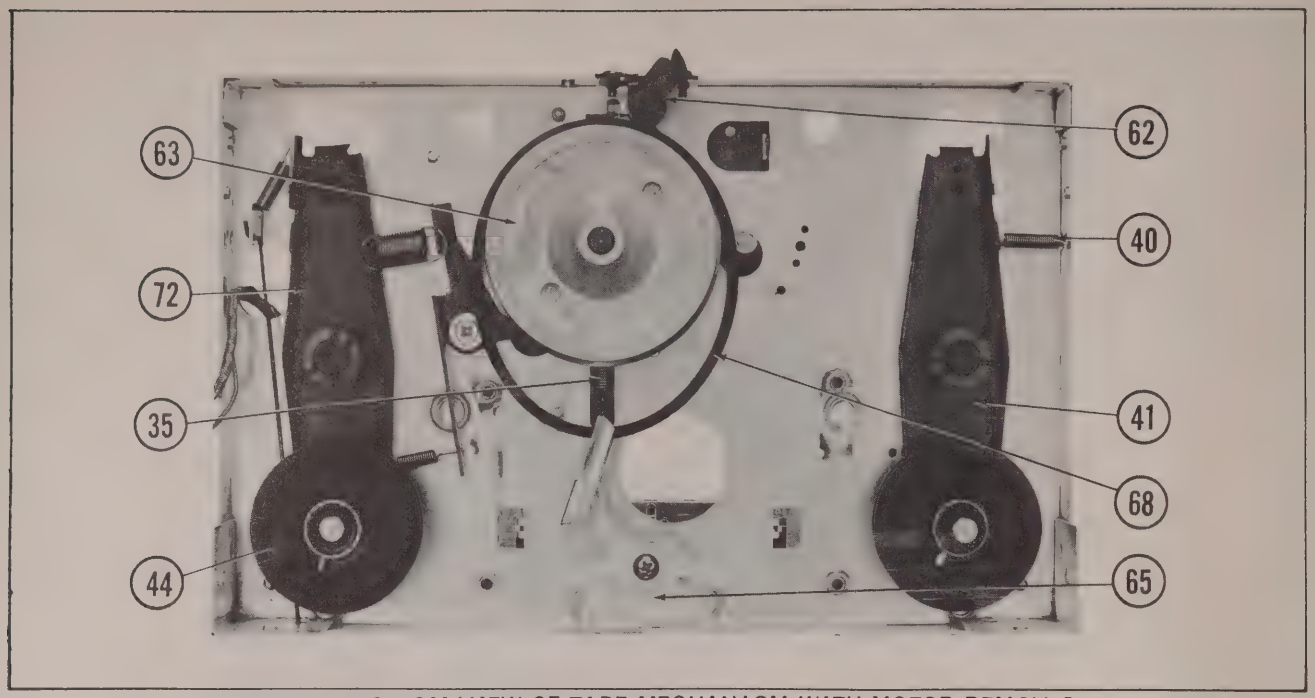
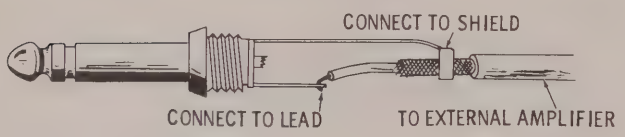


FIGURE 3. BOTTOM VIEW OF TAPE MECHANISM WITH MOTOR REMOVED

CAUTION: Do not insert plug into recorder without external speaker attached, as output tube, transformer, and tone control may be damaged. Plug external amplifier into output jack through a two-conductor plug connected as shown below:



To Edit and Splice Tape

NOTE: It is impossible to edit and splice one track without affecting the other. Recordings to be edited should therefore be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements can be inserted between selections. Unused tape can be spliced for re-use.

2. For best results, cut tape at a slight diagonal, joining ends with a butt joint and fastening on glossy side with splicing tape. Trim off any excess width.

To Erase a Recording

Any recording is automatically erased before a new one is put on when in record position. To erase a recording without recording new material, follow normal recording procedure, except that volume control should be in full counterclockwise position.

DISASSEMBLY

To Remove Unit from Cabinet

1. Remove speaker switch.
2. Remove two speaker leads.
3. Remove AC power plug.
4. Remove four screws from bottom of chassis.
5. Lift recorder straight up and out of cabinet.

To Remove Amplifier from Tape Transport Mechanism

1. Remove head plug.
2. Remove motor plug.
3. Remove reel plates (5).
4. Remove tape drive knob (1).
5. Remove volume and On-Off-Tone knobs (6).
6. Remove fast forward and fast rewind knobs (9).
7. Remove four hex head screws holding amplifier chassis to tape transport (two on each side).
8. Remove amplifier chassis.
9. Remove four snaps holding chassis shield to chassis. Remove shield.
10. To reassemble, reverse the foregoing procedure.

Lubrication applied during manufacture should last for a long time. In cases of unusual use, high operating temperatures, or replacement of a part, lubrication may be required.

MECHANICAL ADJUSTMENTS

Spindle End Play

Spindles (16) should have from 1/32" to 1/16" up and down movement. To adjust, loosen set screw (45) and move spindle pulley (44) up or down until correct end play is obtained.

Take-up Lever

Take-up spring (69) on take-up lever (70) controls the timing of the left take-up reel plate (5). With tape drive knob (1) in playback position, take-up reel should start revolving at same time or a little after pressure roller (33) starts pulling tape past head assembly (19).

Check adjustment by placing a fully-loaded 7" reel on take-up spindle. Rewind for about 10 seconds. Move tape drive knob (1) to playback position and observe action described in previous paragraph.

If adjustment is required, bend ear C on reel arm take-up (72). Make this adjustment carefully, and repeated trials between bends should be made.

Take-up and Feed Reel Drag

When tape drive knob (1) is placed in neutral position, reels should stop promptly, with a minimum of overrun. There should be no looping of tape. With tape drive knob (1) in neutral position and with no reels on reel plates, reel plates may revolve slightly, but when reels are put in place, reel plates should not revolve.

Stops (A and B on Exploded View) on baseplate (18) control this action, regulating the amount of return that reel arm take-up (72) or feed reel arm (41) makes after controls have been released. Insufficient return would cause continued fast rewind or fast forward operation, while too much return would not allow drive belts (46) to put a drag on their respective pulleys. Carefully bend these stops (A and B on Exploded View) to obtain this operation. Stop A controls take-up arm, and Stop B controls feed reel arm.

Head Alignment

Head assembly (19) must be perfectly aligned with tape, or low output, track overlap, or loss of high frequencies may result.

1. (a) Place a full reel of tape on right-hand spindle (16) and thread tape.

   (b) Pull tape tightly against heads (19A) and (19B) by rotating one reel while holding the other reel.

   (c) Both heads should be positioned so that top edge of tape is exactly even with bottom edge of flat section on face of heads.

   (d) In this position, both heads should be aligned vertically and horizontally until perpendicular to tape travel.

   (e) Faces of the heads should be in line with each other in order to present a flat surface to the tape. One head should not protrude forward more than the other.

2. To adjust output response, a tape on which a 3,000-cycle note has been recorded by a unit in good operating condition is required.

   (a) Connect an output meter or AC voltmeter across speaker voice coil.

   (b) Pivot head assembly (19) back and forth on mounting screw (19D) until maximum amplitude on output meter is achieved, but make sure head height has not been changed. If a 3,000-cycle tape is not available, use a recording with a high-note content to make this adjustment.

3. (a) To check for track overlap, make a recording on a blank tape on the unit being checked.

   (b) Do not rewind tape. Reverse reels and play back the other track.

   (c) If sound is heard while playing tape in reverse, there is track overlap. To correct, adjust tape guide on side of head holder by bending guide upward. This should move tracks farther apart.

Switch Cam Adjustment

Play-Record switch in amplifier chassis normally is held in play position by a spring on the switch arm. When cam on end of control shaft and lever (62) actuates switch, the switch moves far enough to allow all circuits to be switched from Playback to Record. If adjustment is required:

1. Loosen set screw (29).
2. Carefully detach one end of switch spring.
3. Depress tape drive knob (1) and turn clockwise to Record position.
4. Manually move control shaft and lever (62) until first contact touches first two wiper contacts. At all times during this step, control shaft and lever (62) must touch switch cam at end of switch slide.
5. Move lifter arm (30) to Record position and tighten set screw (29).
6. Reconnect switch spring.

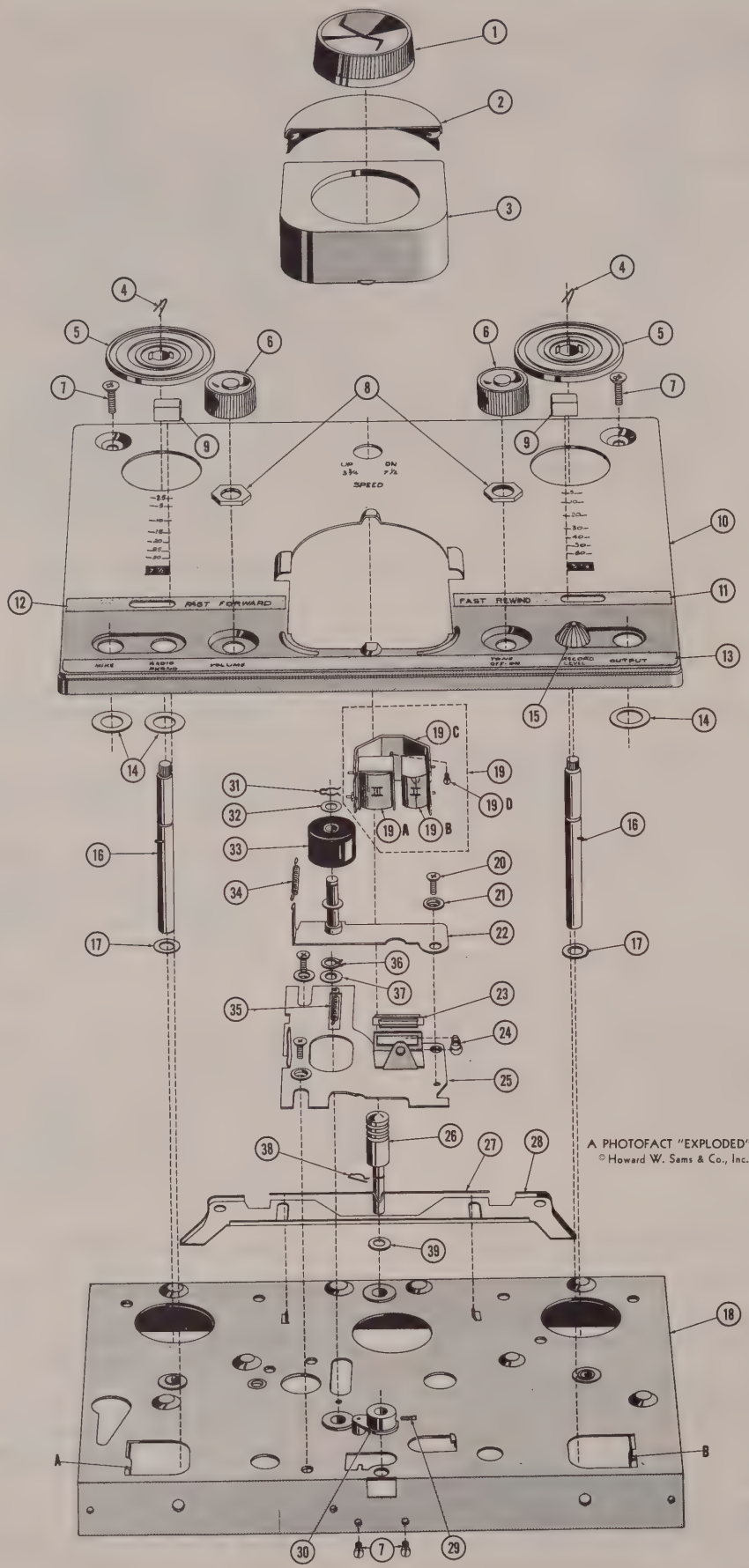


FIGURE 4A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE

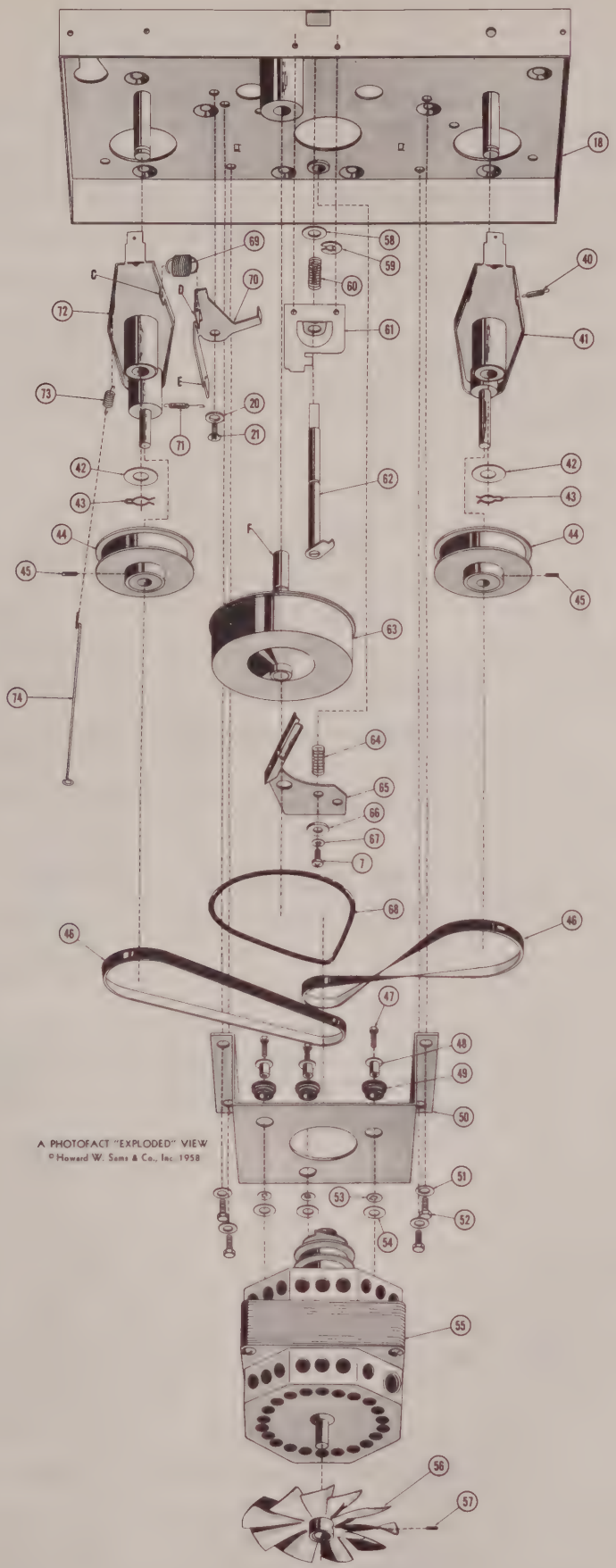


FIGURE 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE

Hum Balance

When record head (19A) or AF amplifier tubes have been changed, setting of hum balancing control should be checked as follows:

1. Connect an AC VTVM across speaker coil. Meter's lowest scale should have a .1-volt reading at full-scale deflection.
2. Turn volume and Off-On-Tone controls fully clockwise.
3. Set tape drive knob (1) to playback position.
4. Adjust hum balance control for minimum reading (not over .1-volt).

Oscillator Coil

If oscillator coil (L1) is replaced, the adjustable slug setting should be checked as follows:

1. Connect a frequency meter between point 2 of erase head and ground.
2. Turn on volume and Off-On-Tone controls.
3. Set tape drive knob (1) to Record position.
4. Adjust oscillator slug for 52.5-kc reading on meter. Use a non-metallic screwdriver.

TROUBLE CHART

Symptom	Cause	Remedy
Improper tape take-up.	1. Spindle (16) (left) binding.	1. Lubricate and check end play.
	2. Improper take-up spring (69) action.	2. See "Take-up Lever Adjustment." (Page 5, column 1)
	3. Drive belt (46) slipping.	3. Clean motor pulley and spindle pulley (44).
	4. Drive belt (46) broken.	4. Replace.
Fails to fast forward and fast rewind properly.	1. See previous cause, except Step 2.	1. See previous remedy, except Step 2. CAUTION: When replacing right drive belt (46), be sure to give it a half twist.
Stalling or binding.	1. Speed control (26) setting changed while unit is off. This should be done only while motor (55) is operating.	1. (a) With motor (55) on try moving speed control (26) up and down several times. (b) Should this fail, try holding fast forward control to left as far as it will go, and with other hand rotate spindle (16). (c) If binding continues, unit must be removed from cabinet to free any binding action.
Speed does not agree with speed setting.	1. Bent belt transfer lever (65).	1. Straighten belt transfer lever (65) so that upper and lower fingers are equidistant from drive belt when belt is in normal operating position.
	2. Broken ears on motor drive pulley.	2. Replace motor (55).
Tape creeps out of tape slot.	1. Head assembly (19) improperly adjusted.	1. See "Head Alignment." (Page 5, column 1)
Plays back but does not record.	1. Faulty component in amplifier.	1. Check voltage and resistance readings.

Symptom	Cause	Remedy
	2. Switch slide not contacting proper terminal.	2. See "Switch Cam Adjustment." (Page 5, column 2)
Does not completely erase previous recording.	1. Faulty 6K6GT tube.	1. Replace tube. This tube may function properly as a power amplifier but not as an oscillator, which is needed for erasing.
	2. Faulty erase head (19B).	2. Replace (see "Head Alignment"). (Page 5, column 1)

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	52-923-0	Tape Drive Knob
2	21-287-0	Head Cover
3	21-168-0	Pressure Roller Cover
4	22-110-0	Reel Plate Retainer
5	84-3435	Reel Plate
6	52-799-0	Volume & Off-On-Tone Knob
7	97-569	#6-32 x 1/4" Phil. Pan Hd. Screw
8	56-230	3/8"-32 Hex Nut
9	52-796-0	Fast Forward & Fast Rewind Knob
10	31-426-0	Top Plate
11	40-3-0	Fast Rewind Escutcheon
12	40-2-0	Fast Forward Escutcheon
13	40-4-0	Front Escutcheon
14	86-265	Flatwasher, Fibre, .376 I.D. x 3/4" O.D.
15	48-138-2	Neon Bulb Jewel
	or 48-139-2	Neon Bulb Jewel (Alt. Part)
16	84-3404	Spindle
17	86-280	Flatwasher, .315" I.D. x 1/2"O.D.
18	84-3421	Baseplate
19		Head Assembly
19A	33-271-0	Record Head
19B	33-270-0	Erase Head
19C	11-1048	Head Mounting Bracket
20	97-573	#6-32 x 1/4" Phil. Fl. Hd. Screw
21	72-135	Slide Button
22	84-3408	Pressure Roller Arm
23	84-3401	Pressure Shoe & Pad
24	70-253-0	Pressure Shoe Spring
25	84-3458	Pressure Plate & Spring
26	84-3405	Plunger Knob & Shaft
27	70-249-0	Brake Plate Spring
28	29-112-1	Brake Plate
29	97-577	#6-32 x 3/8" Cone Pt. Slab Hd. Screw
30	84-3399	Lifter Arm
31	22-40-1	Retainer Spring
32	86-282	Clothwasher, .195" I.D. x .328" O.D.
33	39-1-5	Pressure Roller
34	70-258-0	Pressure Roller Spring
35	70-251-0	Slide Return Spring
36	22-37-1	Retaining Ring
37	86-372	Capstan Washer

Ref. No.	Part No.	Description
38	70-256-0	Plunger Detent Spring
39	86-270	Flatwasher, Rubber, 5/16" I.D. x 9/16" O.D.
40	70-252-0	Brake Spring (Right)
41	84-3419	Feed Reel Arm Ass'y.
42	86-289 or 86-290	Flatwasher, .440"I.D. x 11/16"O.D.
43	22-42-1	Hair Pin Retainer
44	84-3413	Spindle Pulley
45	97-577	#6-32 x 3/8" Cone Pt. Slab Hd. Screw
46	62-78-0	Drive Belt
47	97-574	#8-32 x 5/8" Hex Hd. Screw
48	65-123	Eyelet
49	62-74-0	Rubber Grommet
50	84-3407	Motor & Lug Ass'y. Bracket
51	86-294	Flatwasher, .118" I.D. x 7/16"O.D.
52	97-567	#8-32 x 3/16" Hex Hd. Screw
53	86-293	#8 Internal Tooth Lockwasher
54	86-292	Flatwasher, 11/64" I.D. x 9/16" O.D.
55	84-3456	Motor, Plug & Pulley Ass'y.
56	84-4240	Fan & Hub Ass'y.
57	97-619	#8 x 3/16" Cup Pt. Allen Hd. Set Screw
58	86-288	Flatwasher, Rubber 1/4" I.D. x 1/2" O.D.
59	22-38-1	"E" Washer
60	70-260-0	Record Release Spring
61	11-1046	Control Shaft Positioning Bracket
62	84-3410	Control Shaft & Lever Ass'y.
63	84-3466	Capstan Shaft & Flywheel Ass'y.
64	70-259-0	Compression Spring
65	22-14-4	Belt Transfer Lever
66	86-284	Flatwasher, .170" I.D. x 7/16" O.D.
67	86-45	#6 Internal Tooth Lockwasher
68	62-79-0	Flywheel Belt
69	70-250-0	Take-up Spring
70	22-13-4	Take-up Lever
71	70-257-0	Brake Spring (Left)
72	84-3420	Reel Arm Take-up Ass'y.
73	420181	Foot Switch Lever Return Spring
74	100967	Foot Switch Linkage Wire

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamp.-AF Amp.	12AU7A	
V2	AF Amplifier	12AX7	
V3	Bias Oscillator-Output	6K6GT	
V4	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	300	18-31-3	AFH4-02	D0020	FP420.35 TC77	TMQ-3	T-102	
B	■40	300							
C	▲40	300							
C2	25	25	18-52-5	PRS25V25	BBR25-25	TC36	TD-25-25	MT-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	75		15-75011		D6-750	L10Q75		MS-475	① 10%
C4	470		15-47111		D6-471	5R5T47		MS-347	10%
C5	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C6	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C7	10000		15-10316	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	1000		15-10211			1R5D1	MCB255	MS-21	② 10%
C9	20000		15-20316	BPD-02	DD-203	BYB6S2		5HK-S2	
C10	470		15-47111		D6-471	5R5T47		MS-347	10%
C11	20000		15-20316	BPD-02	DD-203	BYB6S2		5BK-S2	
C12	75		15-75011		D6-750	L10Q75		MS-475	10%
C13	2000	1000	15-20226		DD-202	BYA10D2		5GA-D2	
C14	470		15-47111		D6-471	5R5T47		MS-347	10%
C15	3300			1467-0033	D6-332	1W5D33		1FM-233	③
C16	2000	1000	15-20226		DD-202	BYA10D2		5GA-D2	
C17	470		15-47111		D6-471	5R5T47		MS-347	10%
C18	10		15-10011	DI-00001	DD-100	L10Q1	UC-541	5GA-Q1	
C19	10		15-10011	DI-00001	DD-100	L10Q1	UC-541	5GA-Q1	
C20	10000	1500VAC	20-75-0						
C21	10000	1500VAC	20-75-0						

① Some versions may use 120 mmf 10% in this application (Part #15-12111).
② Ch. 529.59000 uses 750mmf 10% in this application (Part #15-75111).
③ Some versions may use 3000mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	24-267-0	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	500K	½	24-143-2	B-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R3	200Ω	1(WW)	24-1-3					Hum Adjustment

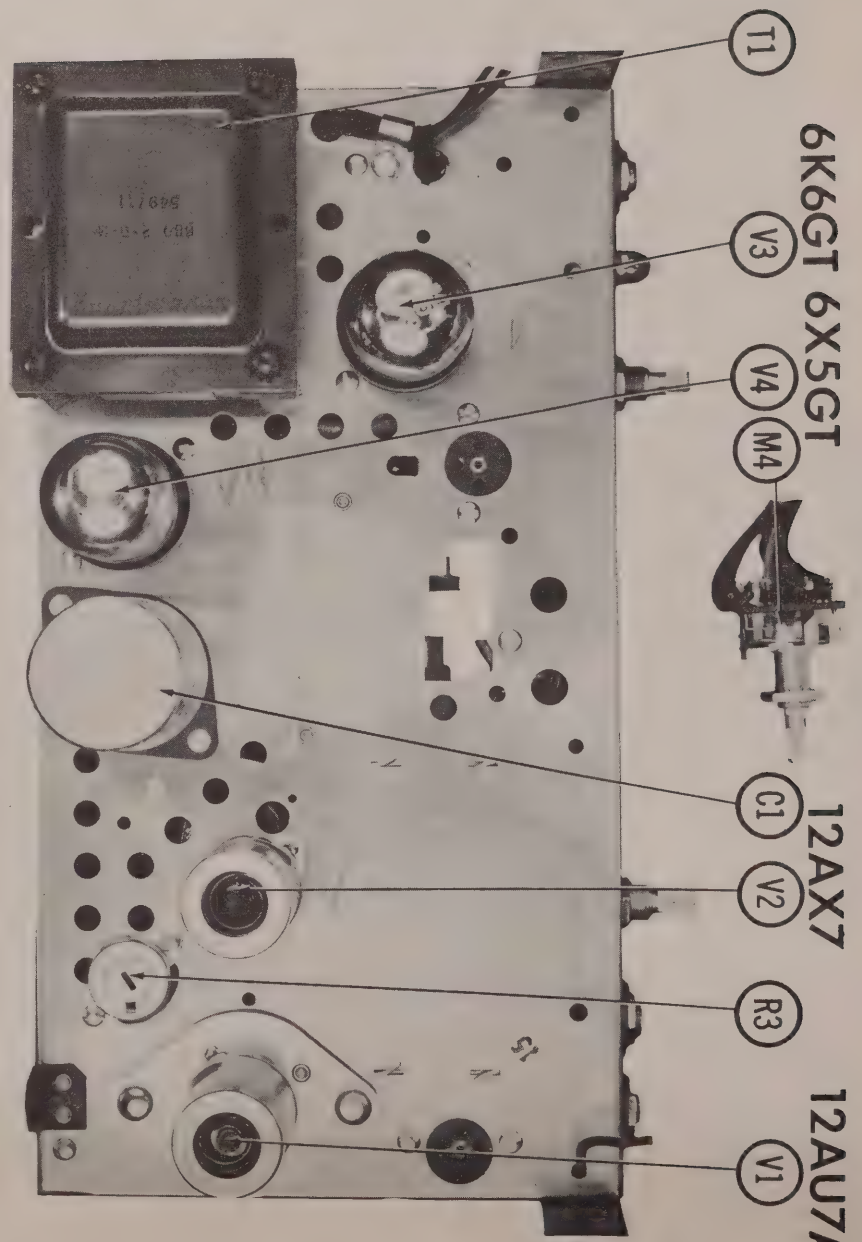
* Use KR with CRL "red label" controls and KB with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R4	1meg		60-10501	
R5	4700Ω		60-47201	
R6	220K		60-22401	
R7	470K		60-47401	
R8	470K		60-47401	
R9	4700Ω		60-47201	
R10	220K		60-22401	
R11	1500Ω		60-15201	
R12	100K		60-10402	
R13	220K		60-22401	①
R14	220K		60-22401	
R15	2200Ω		60-22202	
R16	100K		60-10402	
R17	15K		60-15302	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R18	2.2meg		60-22502	
R19	1meg		60-10501	
R20	470K		60-47401	
R21	10K		60-10302	
R22	1000Ω	4(WW)	61-95	
R23	560K		60-56401	
R24	47K		60-47301	
R25	68K		60-68301	
R26	150K		60-15401	
R27	5.6meg		60-56201	
R28	270Ω	1	60-27111	

① Chassis 528.59000 uses 270K in this application (Part #60-27401).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA SILVERTONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	10-31-4					Includes C15

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .35A	480VCT ⓐ .050A	6.3V ⓐ1.5A	80-2-0	P9211	P-3047		PM-8418	24R11	R-6B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5400Ω	2Ω Tap ⓐ 1.8Ω	80-3-1	Z1004	A-2900	AU-608	A-3850	24S60	S-51X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	8"	PM	3-4Ω	33-254-4	8A2I	Parallel and phase.
SP2	5"	PM	3-4Ω	33-258-4	5AIR	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Head Ass'y.	84-3403	Ch. 528.58000
	Head Ass'y.	84-3418	Ch. 528.58001 (Includes Record Head #33-271-0 and Erase Head #33-270-0)
M2	Neon Lamp	89-19	#NE51
M3	Switch	69-238-0	Record-Play, Slide Type
M4	Switch		Audio, Rotary, Wafer Type
M5	Motor	84-3456	Includes Plug And Pulley Ass'y.

CABINETS & CABINET PARTS

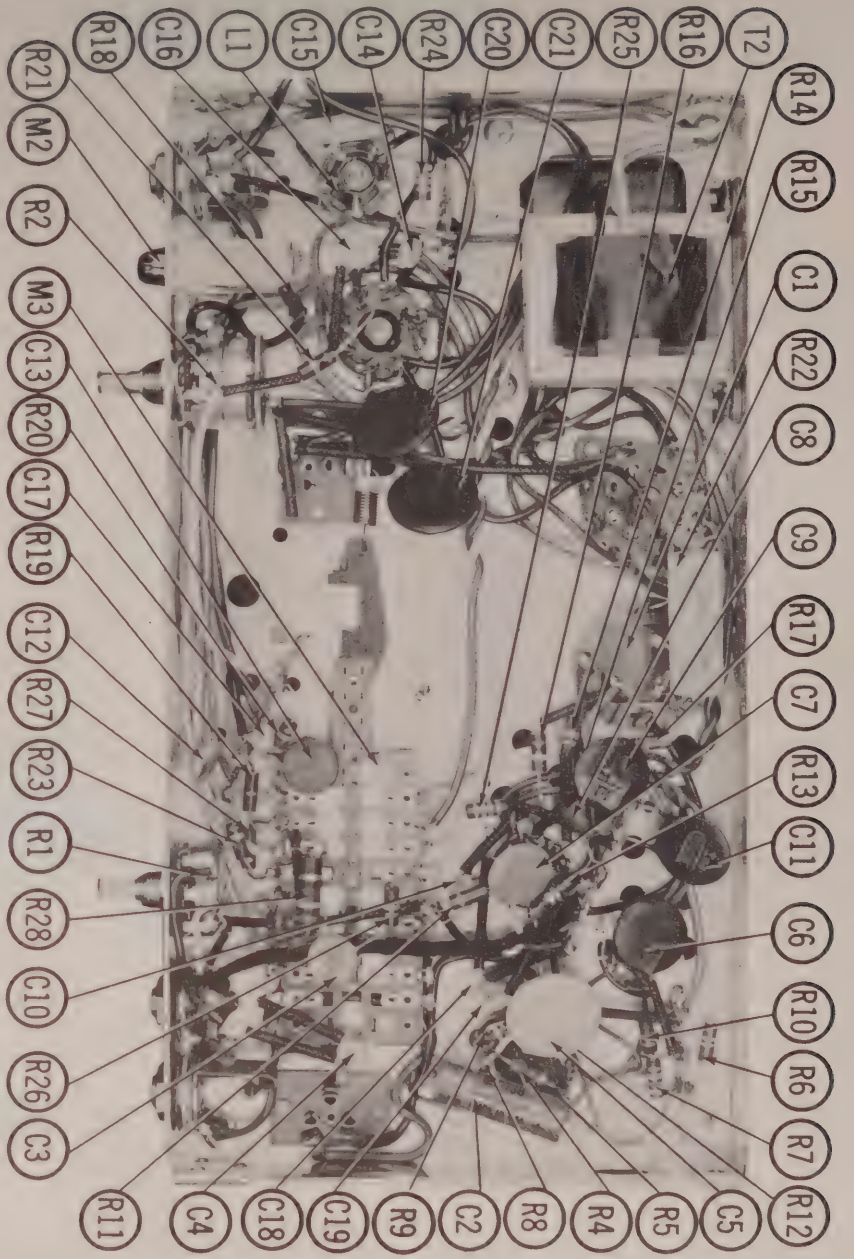
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO	DESCRIPTION
Knob	52-923-0	Tape Drive
Knob	52-796-0	Fast Forward-Fast Rewind
Knob	52-799-0	On-Off-Volume, Tone

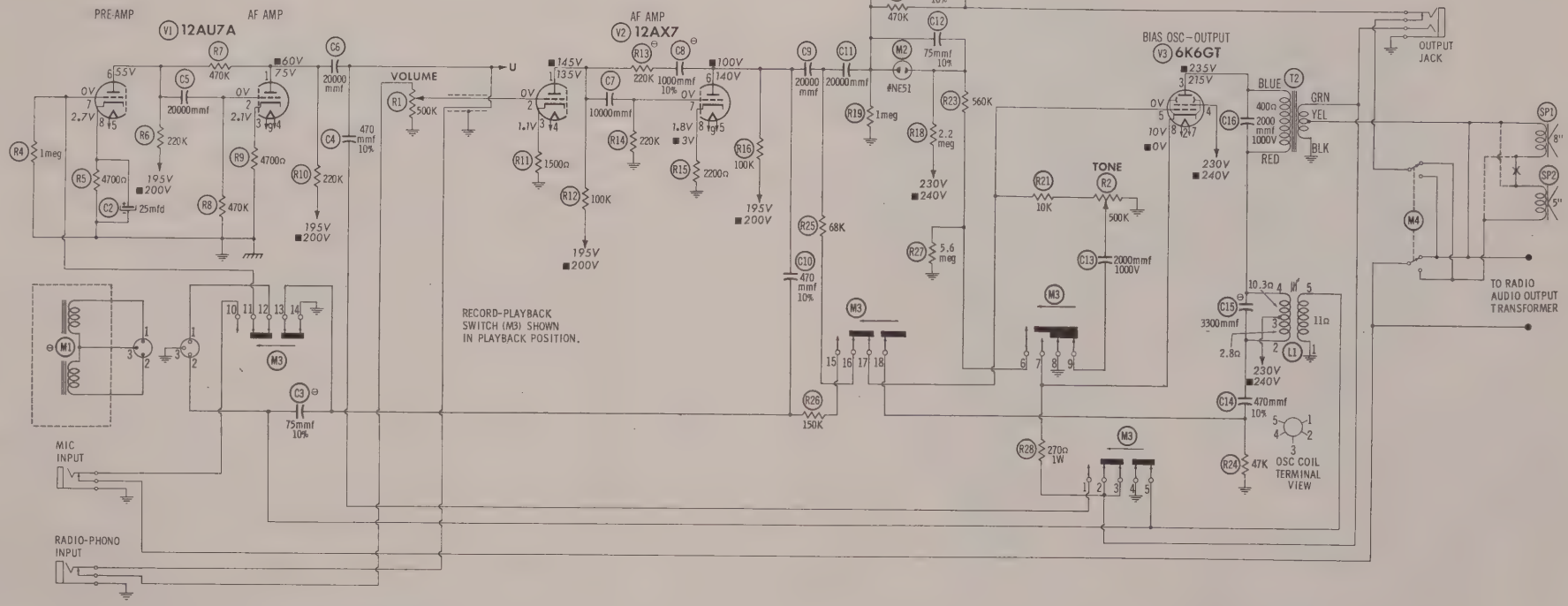
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW



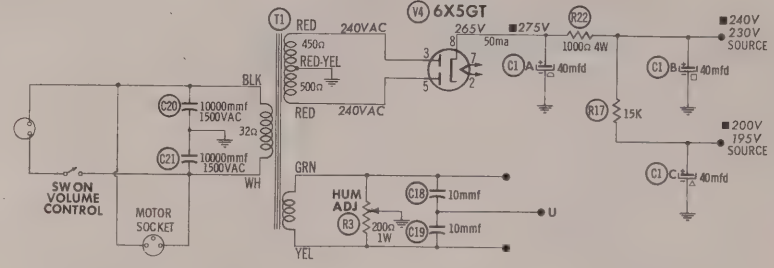
SILVERTONE CHASSIS 528.58000, 528.58001, 528.59000, 528.59001

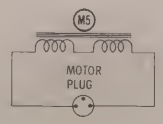


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7A	†165K	470K	4700Ω	45Ω	45Ω	†165K	1meg	4700Ω	45Ω
V2	12AX7	†115K	0Ω	1500Ω	45Ω	45Ω	†115K	220K	2200Ω	45Ω
V3	6K6GT	TP	45Ω	†1400Ω	†1000Ω	500K	TP	45Ω	270Ω	
V4	6X5GT	TP	45Ω	450Ω	TP	500Ω	TP	45Ω	¶	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 8 OF V4.
▪ MEASURED IN "RECORD" POSITION.
TP. TIE POINT.





Ⓔ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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417-12

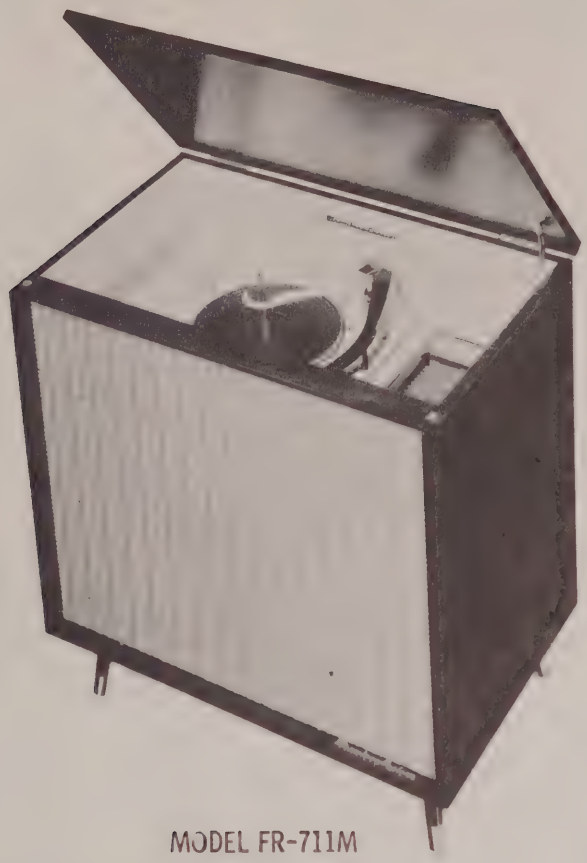
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STROMBERG-CARLSON
MODELS FR-711C, K, M

STROMBERG-CARLSON
MODELS FR-711C, K, M



MODEL FR-711M

STROMBERG-CARLSON
MODELS FR-711C, K, M

TRADE NAME	Stromberg-Carlson Models FR-711C, FR-711K, FR-711M	
MANUFACTURER	Stromberg-Carlson National Service Dept., 1400 N. Goodman St., Rochester 3, N.Y.	
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer	
TUBES	Eleven	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING FM: .94 Amp. @ 117 Volts AC (81 Watts) Less Phono)
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #148000-011 - SEE SIMILAR V-M 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.

DIAL CORD STRINGING

3 TURNS
ON TUNING SHAFT

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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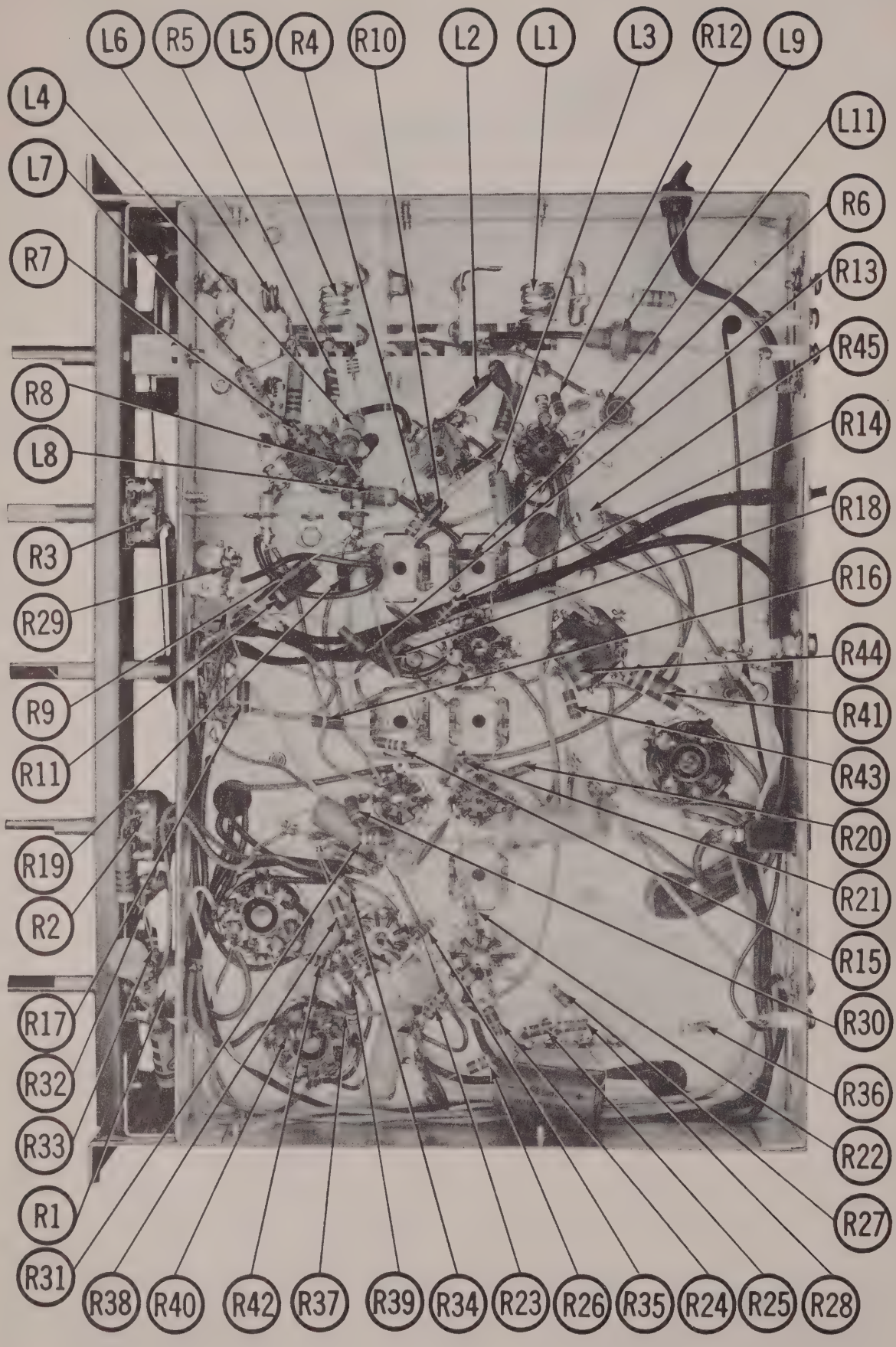
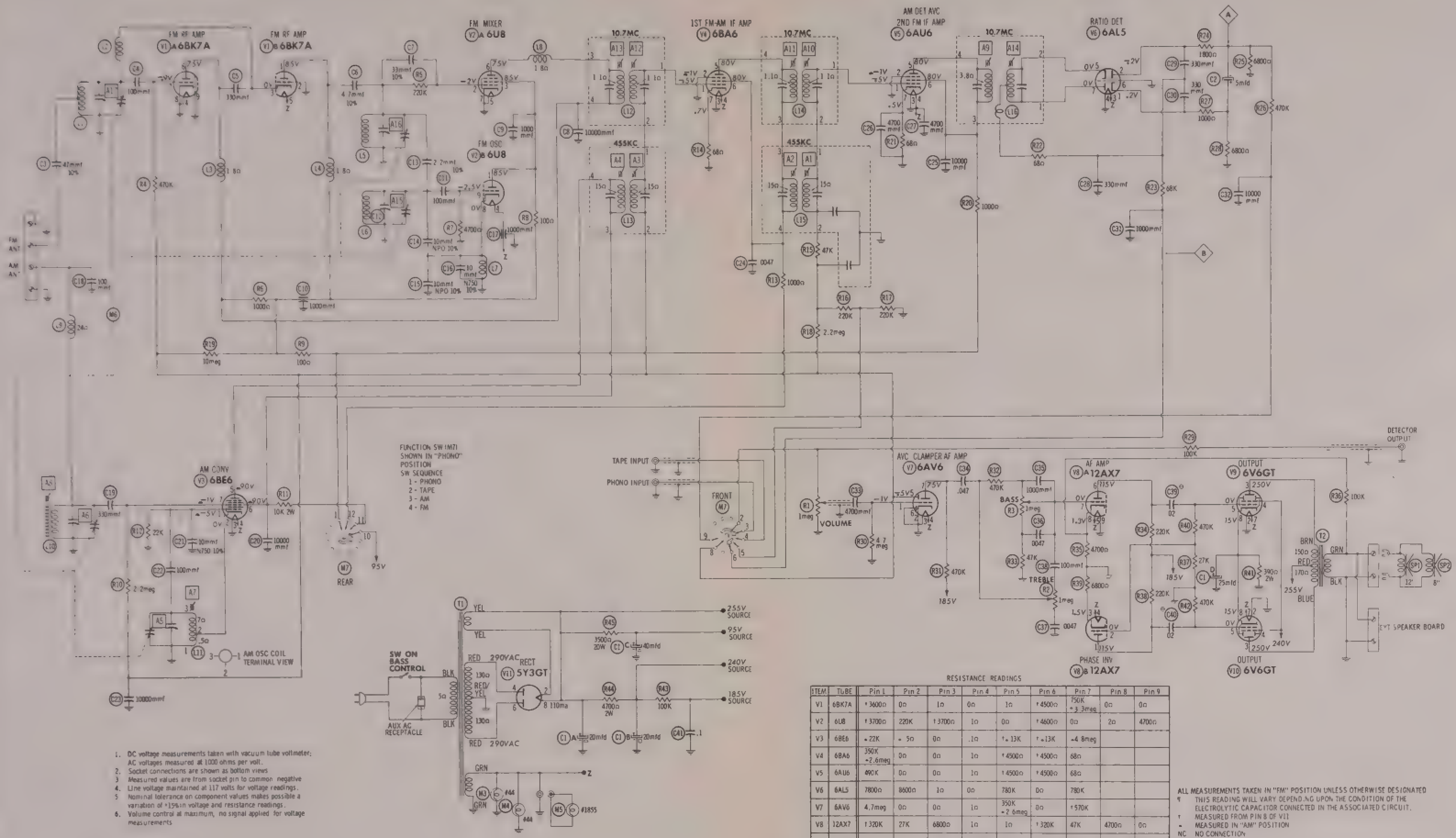
SET 417 FOLDER 13



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7A	↑3600Ω	0Ω	1Ω	0Ω	1Ω	↑4500Ω	750K ↑3.3meg	0Ω	0Ω
V2	6U8	↑3700Ω	220K	↑3700Ω	1Ω	0Ω	↑4600Ω	0Ω	2Ω	4700Ω
V3	6BE6	↑22K	∞ 5Ω	0Ω	.1Ω	↑∞13K	↑∞13K	∞4.8meg		
V4	6BA6	350K ↑2.6meg	0Ω	0Ω	1Ω	↑4500Ω	↑4500Ω	68Ω		
V5	6AU6	4MOK	0Ω	0Ω	1Ω	↑4500Ω	↑4500Ω	68Ω		
V6	6AL5	78000Ω	8600Ω	1Ω	0Ω	780K	0Ω	780K		
V7	6AV6	4.7meg	0Ω	0Ω	1Ω	350K ↑2.6meg	0Ω	↑570K		
V8	12AX7	↑320K	27K	6800Ω	1Ω	1Ω	↑320K	47K	4700Ω	0Ω
V9	6V6GT	NC	0Ω	↑150Ω	↑4700Ω	470K	NC	1Ω	390Ω	
V10	6V6GT	NC	0Ω	↑170Ω	↑4700Ω	500K	NC	1Ω	390Ω	
V11	5Y3GT	NC	¶	NC	130Ω	NC	130Ω	TP	¶	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
↑ MEASURED FROM PIN 8 OF V11
∞ MEASURED IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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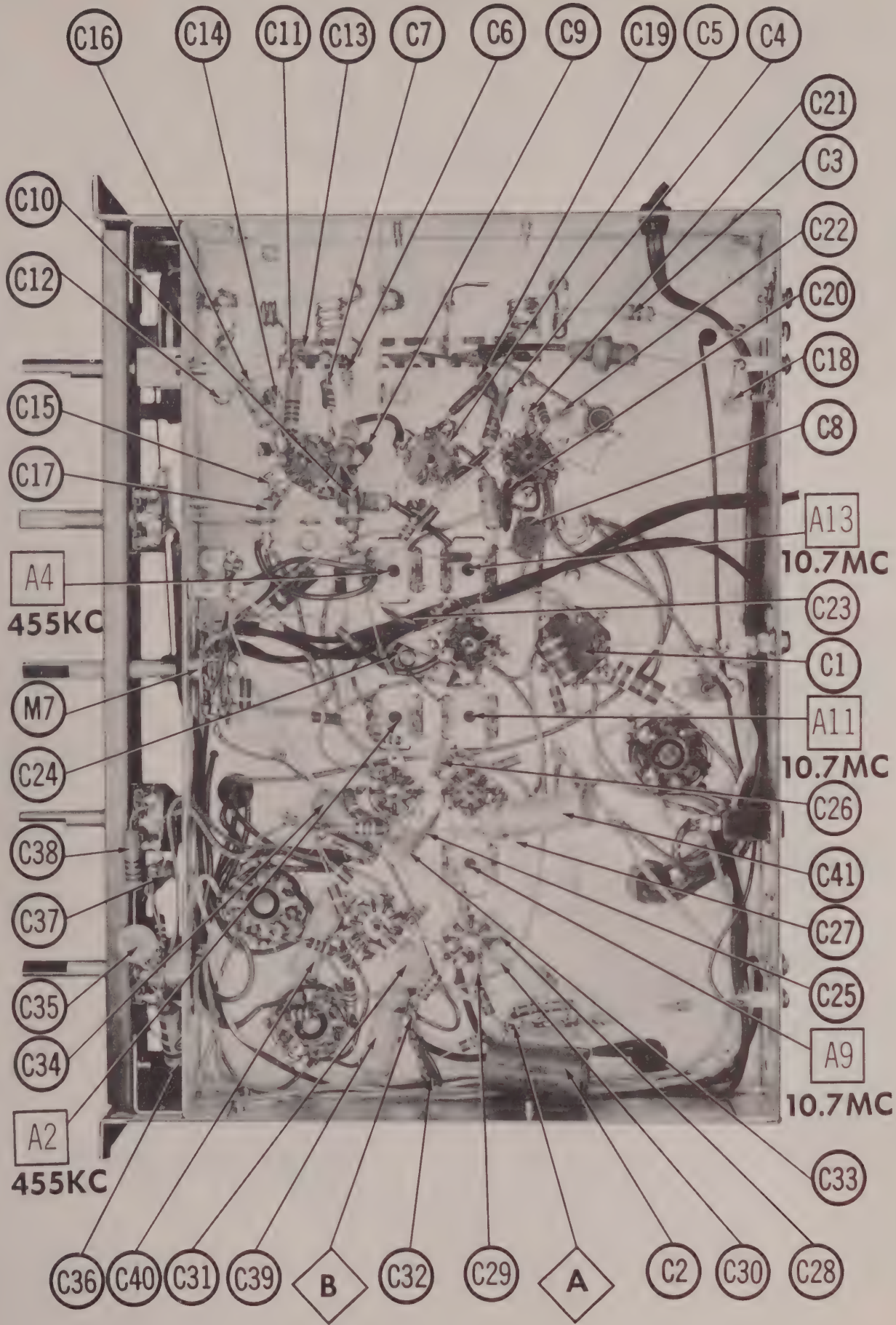
417-13



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	75mmf	High side to AM antenna terminal of tuning gang. Low side to chassis.	1400KC	"	1400KC	"	A5, A6	"
3.	"	"	600KC	"	600KC	"	A7, A8	Adjust for maximum output while rocking tuning gang. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.1mfd	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A9	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	"	"	"	DC probe to point (A). Common to chassis.	A9, A10, A11, A12, A13	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.1mfd	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A9	Disconnect stabilizing capacitor (C2). Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A14	Reconnect C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.
6.	"	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	"	"	"	Vert. Amp. to point (A). Low side to chassis.	A9, A10, A11, A12, A13	Disconnect C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω	High side thru 270Ω to FM antenna terminal. Low side to chassis.	106MC (Unmod)	FM	106MC	DC probe to point (A). Common to chassis.	A15, A16, A17	Adjust for maximum deflection. Reconnect C2.

Check dial calibration and sensitivity at 108MC, 106MC, 90MC and 88MC. Compare with 100MC setting. If variation is excessive, SLIGHTLY compress or expand coil turns of L6 and L5. Repeat step 7.

FIG. 1

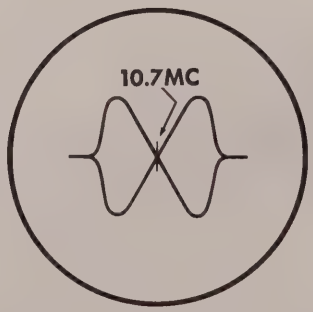


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp.	6BK7A	
V2	FM Mixer-FM Osc.	6U8	
V3	AM Converter	6BE6	
V4	1st. FM-AM IF Amp.	6BA6	
V5	2nd. FM IF Amp. -AM Det. -AVC	6AU6	
V6	Ratio Detector	6AL5	

ITEM No.	USE	TYPE	NOTES
V7	1st. AF Amp. -AVC Clamp.	6AV6	
V8	2nd. AF Amp. -Phase Inv.	12AX7	
V9	Output	6V6GT	
V10	Output	6V6GT	
V11	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲20	450	111090-000	AFH4-76	D0624	FP430.2	TMQ-90	Q-370	TVL-4731
B	■20	450							
C	▲40	350							
D	25	25							
C2	5	50	111093-000	PRS50V5	BBR5-50	TC30	TD-5-50	MT-0504	TVA-1303

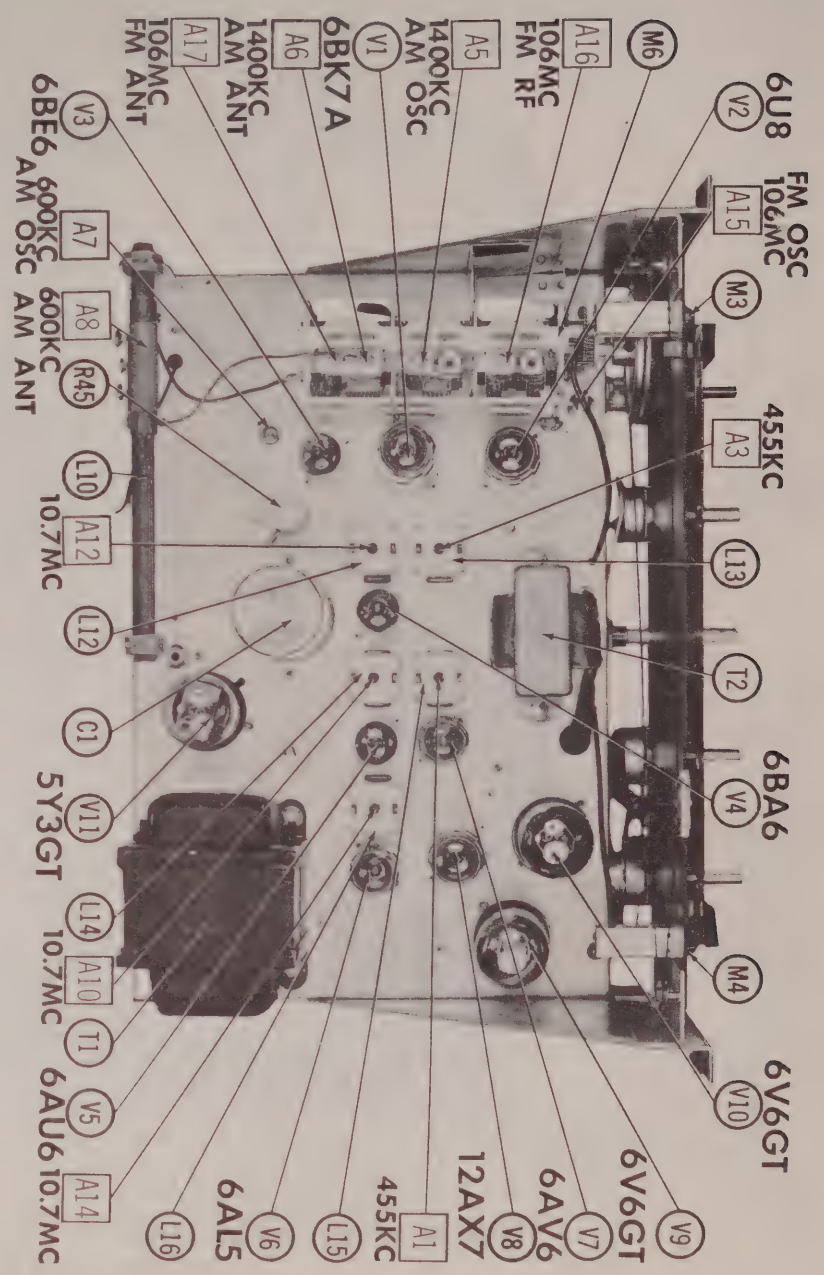
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	47			NPO-SI 47	D6-470	CTA6Q47C		5TCC-Q47	10%
C4	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C5	330			BPD-00033	DD-331	LI0T33		5GA-T33	
C6	4.7			NPO-SI 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	10%
C7	33			NPO-SI 33	D6-330	CTA6Q33C	ZT-5433	5TCC-Q33	10%
C8	10000			BPD-01	DD-103	BYA10SI	DC511	5HK-SI	
C9	1000			BPD-001	DD-102	BYA6DI	DC521	5HK-DI	
C10	1000			EF-001	MFT-1000			503C-DI	
C11	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C12									
C13	2.2			NPO-SI 2.2	TCZ-2R2	CTA6V22C		5TCCB-V22	10%
C14	10			NPO-SI 10	TCZ-10	CTA6Q1C	ZT-541	5TCC-Q1	NPO 10%
C15	10			NPO-SI 10	TCZ-10	CTA6Q1C	ZT-541	5TCC-Q1	NPO 10%
C16	10			N750-SI 10	TCN-10	CTA6Q1U	NT-541	5TCU-Q1	N750 10%
C17	1000			EF-001	MFT-1000			503C-DI	
C18	100			BPD-0001	DD-101	LI0T1	UC-531	5GA-T1	
C19	330			SI 330	D6-331	LT6T33	UC-5333	5GA-T33	
C20	10000			BPD-01	DD-103	BYA10SI	DC511	5HK-SI	
C21	10			N750-SI 10	TCN-10	CTA6Q1U	NT-541	5TCU-Q1	N750 10%
C22	100			BPD-0001	DD-101	LI0T1	UC-531	5GA-T1	
C23	10000			BPD-01	DD-103	BYA10SI	DC511	5HK-SI	
C24	.0047	400		P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C25	10000			BPD-01	DD-103	BYA10SI	DC511	5HK-SI	
C26	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C27	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C28	330			BPD-00033	DD-331	LI0T33	UC-5333	5GA-T33	
C29	330			BPD-00033	DD-331	LI0T33	UC-5333	5GA-T33	
C30	330			BPD-00033	DD-331	LI0T33	UC-5333	5GA-T33	
C31	1000			BPD-001	DD-102	BYA6DI	DC521	5HK-DI	
C32	10000			BPD-01	DD-103	BYA10SI	DC511	5HK-SI	
C33	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C34	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C35	1000			BPD-001	DD-102	BYA6DI	DC521	5HK-DI	
C36	.0047	400		P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C37	.0047	400		P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C38	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C39	.02	400		P488N-02	DF-203	CUB4S2	GEM-412	4TM-S2	①
C40	.02	400		P488N-02	DF-203	CUB4S2	GEM-412	4TM-S2	
C41	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

① Some versions may use .022mfd 400V in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	145000-011	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	145000-011	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	145000-012	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "red label" controls and KB with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R4	470K			
R5	220K			
R6	1000Ω			
R7	4700Ω			
R8	100Ω			
R9	100Ω			
R10	2.2meg			
R11	10K	2		
R12	22K			
R13	1000Ω			
R14	68Ω			
R15	47K			
R16	220K			
R17	220K			
R18	2.2meg			
R19	10meg			
R20	1000Ω			
R21	68Ω			
R22	68Ω			
R23	68K			
R24	1800Ω			

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R25	6800Ω			
R26	470K			
R27	1000Ω			
R28	6800Ω			
R29	100K			
R30	4.7meg			
R31	470K			
R32	470K			
R33	47K			
R34	220K			
R35	4700Ω			
R36	100K			
R37	27K			
R38	220K			
R39	6800Ω			
R40	470K			
R41	390Ω	2		
R42	470K			
R43	100K			
R44	4700Ω	2		
R45	3500Ω	20		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Stromberg-Carlson PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil						
L2	Cathode Choke		19-1001	BC-562	4604		1.5 Microhenries
L3	RF Choke		19-1002	BC-563	4606		2.2 Microhenries ①
L4	RF Choke		19-1002	BC-563	4606		2.2 Microhenries ①
L5	FM RF Coil						
L6	FM Osc Coil						
L7	Cathode Choke			BC-560	4588		.47 Microhenry ①
L8	RF Choke		19-1002	BC-563	4606		2.2 Microhenries ①
L9	AM Ant. Coil			BC-549	6302		2.5 Millihenries
L10	Loop Stick						
L11	AM Osc. Coil		14-1055		70-OSC *		* Disregard primary.
L12	1st. FM IF	114363-000	16-3487	FM-254	1463		
L13	1st. AM IF	114364-000	16-6758	BC-352	12-C1	RF-1	
L14	2nd. FM IF	114363-000	16-3487	FM-254	1463		
L15	2nd. AM IF	114453-000	16-6770	BC-355	12-C6		
L16	Ratio Det.	114485-000	17-3498	FM-255	1465		

① IRC Part #CLA.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .88A	620VCT @ .110A	5V @ 2A	161456-000	P9312 ①			PC8422①		R-14A ①
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 4.1A									

① Drill new mounting holes ; tape 6.3V center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5500Ω CT	3-4Ω	161299-000	Z1402	A-2904	AU-604	A-3852	26S46	S-55Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	QUAM PART No.	
SP1	12"	PM	4-6Ω	155865-000	12A6AZ5.3	
SP2	8"	PM	4-6Ω	155875-000	8A6Z6	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Stromberg-Carlson PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	171000-043	89-TB				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Stromberg-Carlson PART No.	JENSEN PART No.	WALCO PART No.	
M2	171000-041 ① 171000-124 ②	†JPS-39 or †♦JPS-39SD or ♦JPS-39D	†W-41TPS or †♦W-41DS or ♦W-41TPD	① Dual Sapphire ② Diamond LP, Sapphire Std.

† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M3	Dial Lamp	137012-000	#44
M4	Dial Lamp	137012-000	#44
M5	Lamp		Cabinet Lamp #1855
M6	Tuning Cap.	110065-000	5 Gang (AM Sections: Ant. 30-335mmf, Osc. 13-129mmf)
M7	Switch		4 Position Single Wafer Rotary (AM, FM, Aux, Phono)
M8	Switch	171000-033	Motor Switch (Phono)
M9	Motor	171000-039	Phono

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	134314-000	Tuning, Volume, Bass, Treble
Knob	134313-000	Function
Knob	171000-138	Phono
Cabinet	108000-048	Model FR-711M
Cabinet	108000-049	Model FR-711C
Cabinet	108000-050	Model FR-711K
Cabinet Back	101000-001	
Legs	166000-034	Cherry
Legs	166000-033	Mahogany
Legs	166000-041	Oak

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

WESTINGHOUSE MODELS HR-107DP, HR-108DP, HR-109DP, HR-120DP, HR-121DP, HR-122DP (Ch. V-2501-2, V-2502-2, -3)

WESTINGHOUSE MODELS HR-107DP, HR-108DP, HR-109DP, HR-120DP, HR-121DP, HR-122DP (Ch. V-2501-2, V-2502-2, -3)

MODEL HR-109DP

WESTINGHOUSE MODELS HR-107DP, HR-108DP, HR-109DP, HR-120DP, HR-121DP, HR-122DP (Ch. V-2501-2, V-2502-2, -3)

TRADE NAME	Westinghouse Models HR-107DP, HR-108DP, HF-109DP (Ch. V-2502-2 Tuner, V-2501-2 Amp.); HR-120DP, HR-121DP, HR-122DP (Ch. V-2502-3 Tuner V-2501-2 Amp.)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N.J.
TYPE SET	AC Operated FM AM Receiver with 4 Speed Automatic Record Changer
TUBES	Tuner: 8 Amplifier: 4
POWER SUPPLY	110-120 Volts AC 60-Cycle RATING 1.22 Amp. @117 Volts AC (120Watts Less Motor)
TUNING RANGE— BROADCAST 540-1600KC	FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1200A — PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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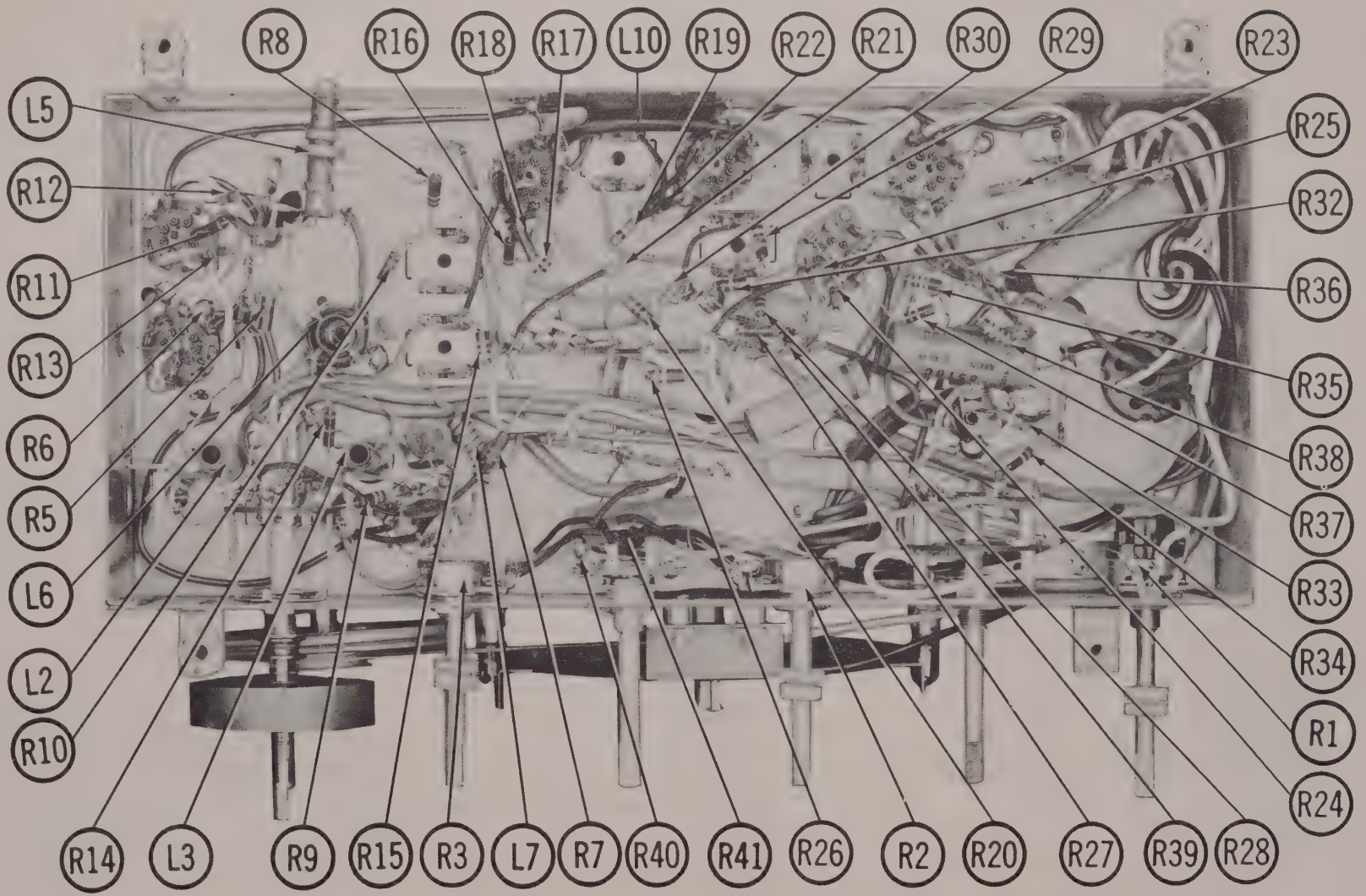
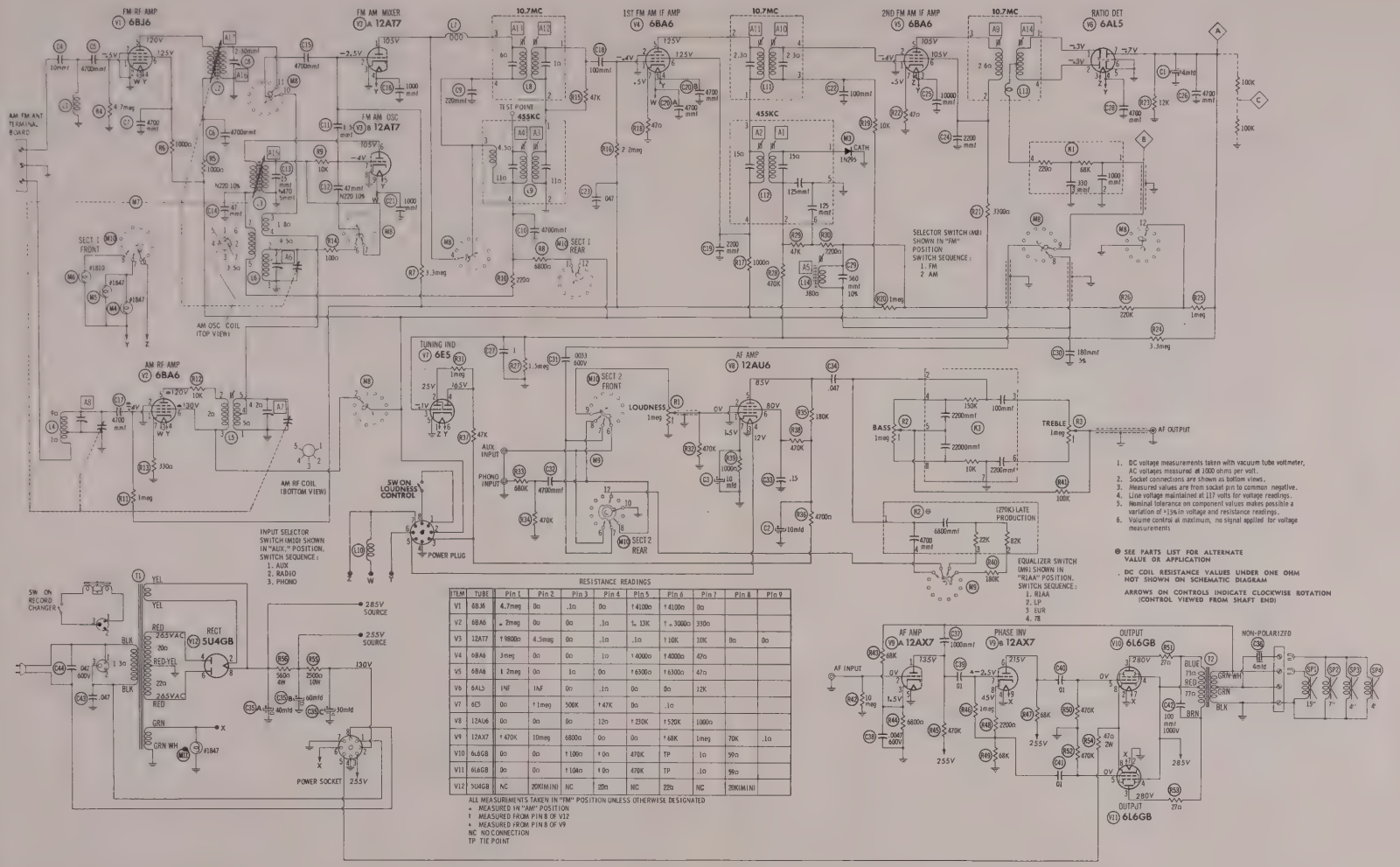


TUNER CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.


FM RF AMP V1 6BJ6
FM AM MIXER V2 A 12AT7
FM AM OSC V3 B 12AT7
10.7MC
1ST FM AM IF AMP V4 6BA6
2ND FM AM IF AMP V5 6BA6
RATIO DET V6 6AL5
455KC
AM FM ANT TERMINAL BOARD
AM OSC COIL (TOP VIEW)
AM RF AMP V7 6BA6
AM RF COIL (BOTTOM VIEW)
TUNING IND V7 6E5
AF AMP V8 12AU6
SECT 1 FRONT
SECT 1 REAR
SECT 2 FRONT
SECT 2 REAR
SELECTOR SWITCH (M8) SHOWN IN "FM" POSITION SWITCH SEQUENCE: 1. FM 2 AM
LOUDNESS
BASS
TREBLE
AF OUTPUT
AUX INPUT
PHONO INPUT
SW ON LOUDNESS CONTROL
POWER PLUG
INPUT SELECTOR SWITCH (M10) SHOWN IN "AUX." POSITION. SWITCH SEQUENCE: 1. AUX 2. RADIO 3. PHONO
(270K) LATE PRODUCTION
EQUALIZER SWITCH (M9) SHOWN IN "RIAA" POSITION. SWITCH SEQUENCE: 1. RIAA 2. LP 3 EUR 4. 78
SW ON RECORD CHANGER
RECT V12 5U4GB
265VAC
RED
BLK
YEL
GRN
GRN WH
#1847
285V SOURCE
255V SOURCE
130V
POWER SOCKET
AF AMP V9 A 12AX7
PHASE INV V9 B 12AX7
OUTPUT V10 6L6GB
OUTPUT V11 6L6GB
AF INPUT
NON-POLARIZED
BLUE
RED
GRN
BRN
BLK
GRN WH
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
. DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	4.7meg	0Ω	.1Ω	0Ω	†4100Ω	†4100Ω	0Ω		
V2	6BA6	▲ 2meg	0Ω	0Ω	.1Ω	↳ 13K	↑ ▲ 3000Ω	330Ω		
V3	12AT7	†9800Ω	4.3meg	0Ω	.1Ω	.1Ω	†10K	10K	0Ω	0Ω
V4	6BA6	3meg	0Ω	0Ω	1Ω	†4000Ω	†4000Ω	47Ω		
V5	6BA6	1.2meg	0Ω	1Ω	0Ω	†6300Ω	†6300Ω	47Ω		
V6	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	12K		
V7	6E5	0Ω	†1meg	500K	†47K	0Ω	.1Ω			
V8	12AU6	0Ω	0Ω	0Ω	12Ω	†230K	†520K	1000Ω		
V9	12AX7	†470K	10meg	6800Ω	0Ω	0Ω	†68K	1meg	70K	.1Ω
V10	6L6GB	0Ω	0Ω	†100Ω	†0Ω	470K	TP	1Ω	99Ω	
V11	6L6GB	0Ω	0Ω	†104Ω	†0Ω	470K	TP	.1Ω	99Ω	
V12	5U4GB	NC	290K(MIN)	NC	22Ω	NC	22Ω	NC	290K(MIN)	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
▲ MEASURED IN "AM" POSITION
† MEASURED FROM PIN 8 OF V12
↳ MEASURED FROM PIN 8 OF V9
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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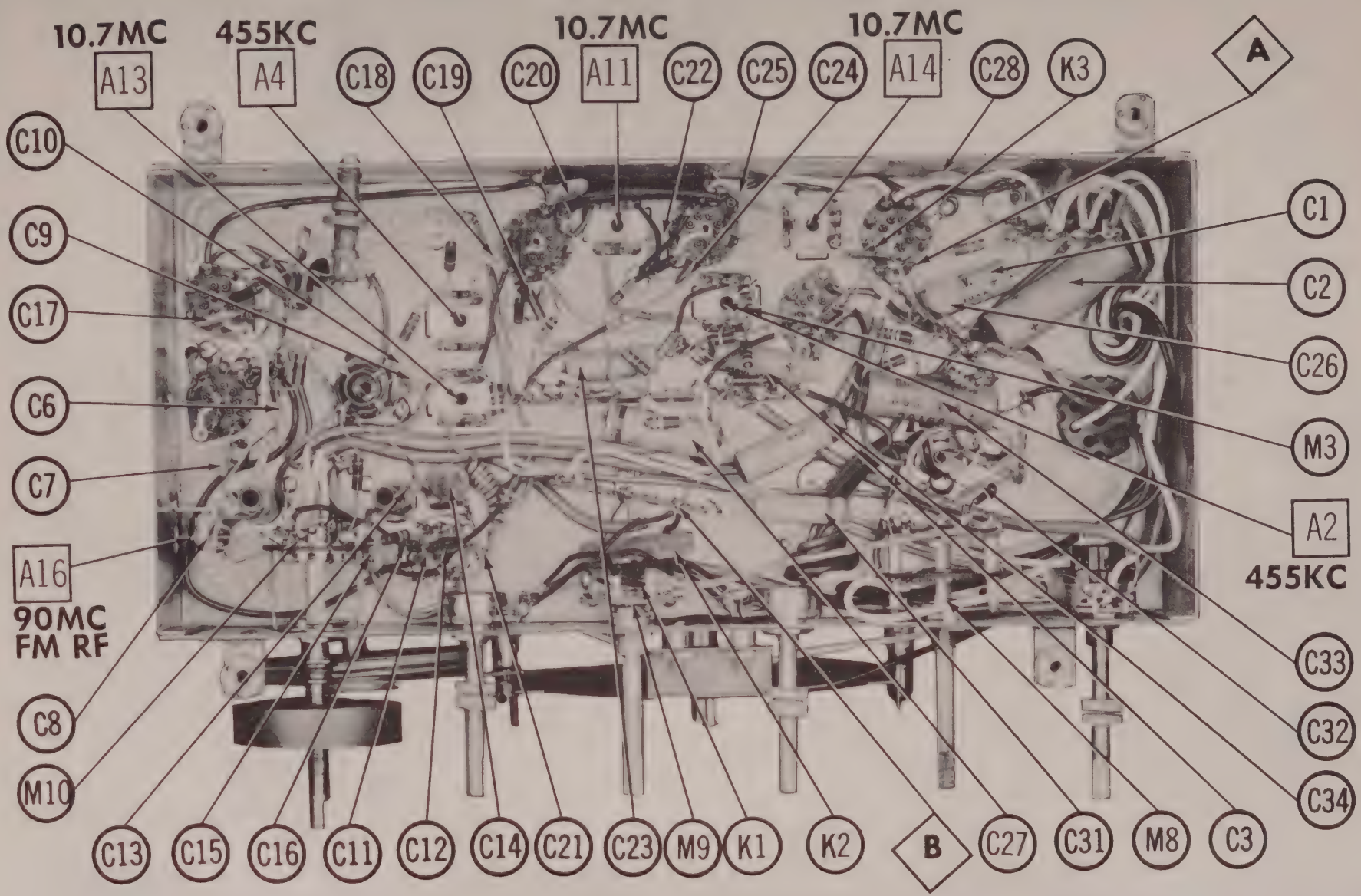
417-14



TUNER CHASSIS BOTTOM VIEW - ALIGN, CAPACITOR & MISC IDENT.

WESTINGHOUSE
MODEL HR-10TDP (CH. V-2502-2 TUNER)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.005mfd	High side to pin 2 (grid) of 12AT7 (V3). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open.	Across Voice Coil	A1, A2, A3, A4,	Adjust for maximum output.
2.	"	"	455KC (10KC Mod.)	"	"	"	A5	Adjust for MINIMUM output.
3.	"	High side to AM Ant. stator lug of tuning gang. Low side to chassis.	1625KC (400∿ Mod.)	"	"	"	A6	Adjust for maximum output.
4.	"	"	1400KC	"	Tune to 1400KC signal.	"	A7	"
5.		Loop	"	"	"	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (± 1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	.005mfd	High side to pin 2 (grid) of 12AT7 (V3). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ Common to chassis.	A9, A10 A11, A12 A13	Adjust for maximum deflection.
7.	"	"	"	"	"	DC probe to point Ⓑ Common to point Ⓒ.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	.005mfd	High side to pin 2 (grid) of 12AT7 (V3). Low side to chassis.	10.7MC (450KC SWP)	FM	Point of non-interference	Vert. Amp. to point Ⓐ Low side to chassis.	A9, A10 A11, A12 A13	Disconnect stabilizing capacitor C1. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1
7.	"	"	"	"	"	Vert. Amp. to point Ⓑ Low side to chassis.	A14	Reconnect stabilizing capacitor C1. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	270Ω Carbon Resistor	Across FM Ant. terminals with 270Ω in high side.	98MC (Unmod.)	FM	98MC	DC probe to point Ⓐ Common to chassis.	A15	Adjust for maximum deflection.
9.	"	"	"	"	"	"	A16	Adjust for maximum deflection while rocking tuning gang.
10	"	"	105MC	"	Tune for 105 MC signal	"	A17	"
11.	"	"	90MC	"	Tune for 90MC signal	"	A16	Adjust for maximum deflection while rocking tuning gang. Repeat Steps 10 & 11 for proper tracking.

FIG. 1

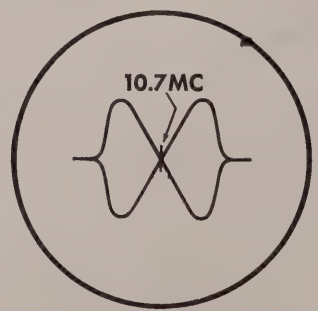


FIG. 2

TUNER PARTS LIST AND DESCRIPTIONS (cont)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BJ6	
V2	AM RF Amplifier	6BA6	
V3	FM AM Mixer - FM AM Osc.	12AT7	
V4	1st FM AM IF Amp	6BA6	
V5	2nd FM IF Amplifier	6BA6	
V6	Ratio Detector	6AL5	
V7	Tuning Indicator	6E5	
V8	AF Amplifier	12AU6	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	4	50	218V025H11	PRS150V4	BBR4-50	TC30	TD-4-50	MT-0504	TVA-1402
C2	10	300	218V038H01	PRS350V10	BR1045	TC62	TD-10-450	MT-4510	TVA-1604
C3	10	25	218V040H01	PRS25V10	BBR10-25	TC22	TD-10-25	MT-0210	TVA-1204

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

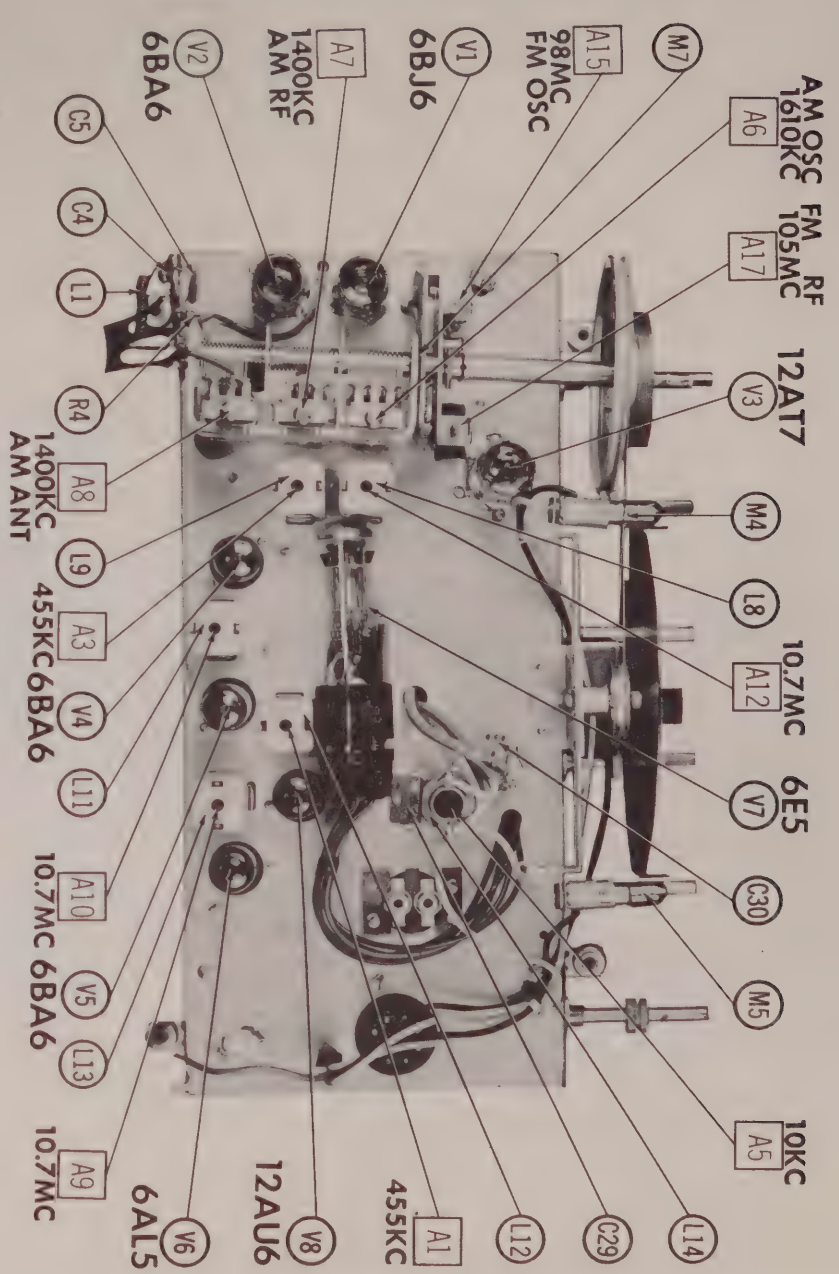
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	10		217V021A00	SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C5	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C6	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C7	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C8	2-30		217V504H01						
C9	220		215V022A21	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C10	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C11	1.5		217V021A59	NP0-SI1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	
C12	47		215V014A70						N220 10%
C13	.5								N470 .5mmf
C14	47		215V014A70						N220 10%
C15	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC5247	5GA-D47	
C16	1000		215V111A02	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C17	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C18	100		215V101A01	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C19	2200		215V102A22	BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C20A	4700						UC-5247		
B	4700		215V301H02	BPD-2X0047	DD2-502	BYC6DD47	UC-5247	5HK-2D47	
C21	1000		215V111A02	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C22	100		215V101A01	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C23	.047	200	210V004A73	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C24	2200		215V102A22	BPD-0022	DD-222	BYA10D22	UC-5222	5GA-D22	
C25	10000		215V111A03	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C26	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C27	.1	200	210V001A04	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C28	4700		215V114A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C29	560		213V015A61	1469-00056	D6-561	5R5T56		MS-356	10%
C30	180		213V011A81	1464-00018		22R5T18		MS-318	5%
C31	.0033	600		P688N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	①
C32	4700		215V104A72	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C33	.15	400	210V011A54	P488N-15		CUB4P15	GEM-4015	4TM-P15	
C34	.047	400	210V014A73	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

①Some versions may use 10000mmf in this application (Part # 215V111A03)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg		270V049H01				PP16A	Loudness & Switch
R2A	1meg		270V048H01	B-69	A47-2meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg		270V048H02	B-69	A47-2meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

TUNER CHASSIS—TOP VIEW



TUNER PARTS LIST AND DESCRIPTIONS (cont)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Westinghouse PART No.	NOTES
R4	4.7meg		250V234A75	
R5	1000Ω		250V231A02	
R6	1000Ω		250V231A02	
R7	3.3meg		250V233A35	
R8	6800Ω		250V236A82	
R9	10K		250V221A03	
R10	220Ω		250V232A21	
R11	1meg		250V231A05	
R12	10K		250V221A03	
R13	330Ω		250V233A31	
R14	100Ω		250V231A01	
R15	47K		250V234A73	
R16	2.2meg		250V232A25	
R17	1000Ω		250V231A02	
R18	47Ω		250V234A70	
R19	10K		250V231A03	
R20	1meg		250V231A05	
R21	3300Ω		250V223A32	
R22	47Ω		250V234A70	
R23	12K		250V221A23	
R24	3.3meg		250V233A35	
R25	1meg		250V231A05	
R26	220K		250V222A24	
R27	1.5meg		250V221A55	
R28	470K		250V234A74	
R29	47K		250V234A73	
R30	2200Ω		250V232A22	
R31	1meg		250V231A05	
R32	470K		250V234A74	
R33	680K		250V236A84	
R34	470K		250V234A74	
R35	180K		250V221A84	
R36	4700Ω		250V224A72	
R37	47K		250V234A73	
R38	470K		250V234A74	
R39	1000Ω		250V231A02	
R40	180K		250V221A84	
R41	100K		250V231A04	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Westinghouse PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	230V049H01	19-1000	BC-561	4602		1 Microhenry
L2	FM RF Coil	230V054H01					
L3	FM Osc. Coil	230V055H03					
L4	Loop Stick	310V024H01					
L5	AM RF Coil	230V043H01					
L6	AM Osc. Coil	230V053H02					
L7	RF Choke	230V056H14	19-3001	BC-561		VP-9	.9 Microhenry
L8	1st FM IF	235V039H01	16-3487	FM-254	1463		
L9	1st AM IF	235V036H01					
L10	Fil. Choke	230V056H02	19-1000	BC-561	4602		1.1 Microhenry
L11	2nd FM IF	235V037H01	16-3487	FM-254	1463		
L12	2nd AM IF	235V038H01	16-6770	BC-355	12-C6		
L13	Ratio Det.	235V040H01	17-3498	FM-255	1465		
L14	10KC Filter	230V048H01					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	DE-Emphasis Network	330mmf, 1000mmf, 220Ω, 68K	219V017H01	

TUNER PARTS LIST AND DESCRIPTIONS

COMPONENT COMBINATIONS (cont)

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K2	Equalizing Network	680mmf, 4700Ω, 22K, 82K①	219V018H01 ①	Aerovox PA-512-3 Centralab PC-158 Sprague DT-5
K3	Tone Comp.	100mmf, 2200mf, 2200mmf, 22000mmf, 10K,150K	219V021H01	

① Late production versions replace 82K with 270K (K2 Part #219V018H02)

PHONO CARTRIDGE

ITEM No.	Westinghouse PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. MOUNT	REMARKS
M1		89-TB				

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA Westinghouse PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M3	IN295①	296V002H01	IN60	IN60	AM Det. (Pigtail)

①IN87G may be used in some versions.

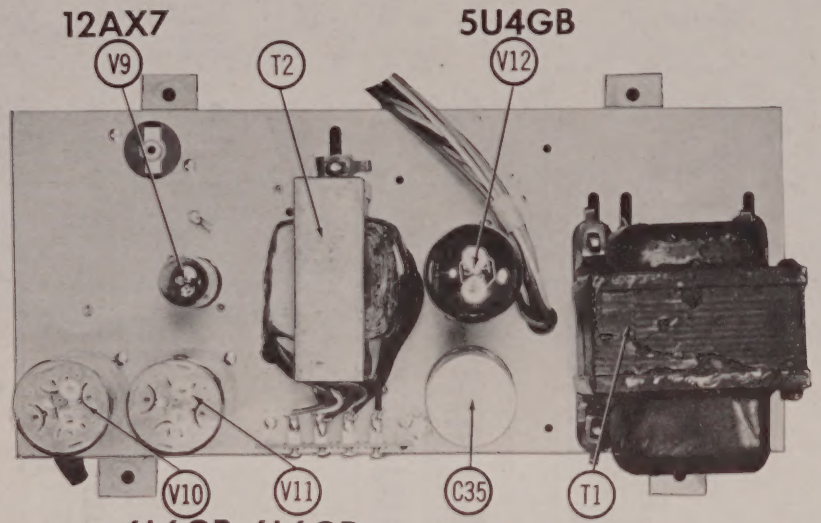
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

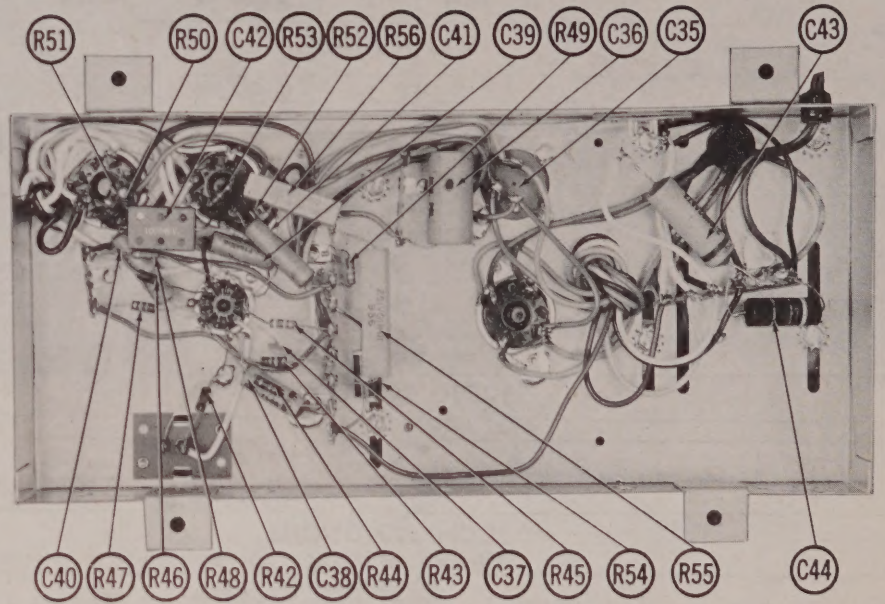
ITEM No.	Westinghouse PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2		† S-61 or †♦ S-61SD or ♦ S-61D	† W-77TPS or †♦ W-77DS or ♦ W-77TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	Lamp	756V501H02	#1847
M5	Lamp	756V501H02	#1847
M6	Lamp	756V501H04	#1810
M7	Tuning Cap.	330V018H01	AM (Ant. 30-365mmf, RF 13-217mmf, Osc. 19-165mmf)
M8	Switch	756V022H01	Selector, Rotary Wafer Type
M9	Switch	756V026H01	Equalizer, Rotary Wafer Type
M10	Switch	756V023H01	Input, Rotary Wafer Type



AMP CHASSIS - TOP VIEW



AMP CHASSIS - BOTTOM VIEW

WESTINGHOUSE
MODEL HR-107DP (CH. V-2502-2 TUNER)

AMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V9	AF Amp-Phase Inv.	12AX7	
V10	Output	6L6GB	
V11	Output	6L6GB	
V12	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C35A	▲40	400	218V037H01 ①	AFH3-154-20	D0054	FP447.5	TMQ-119	T-175	TVL-4666
B	■60	350						MT-4530	
C	▲30	300							
C36	4	50NP	218V035H01	NP-PRS50V4	BBR8-150† BBR8-150†	TC41 † TC41	TD-8-150† TD-8-150†	MT-1508† MT-1508†	R2415 *

①In some versions, C35A is 80mfd and C35B is 70mfd (C35 Part #218V037H02)

† Connect Negative Leads Together

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C37	1000		215V111A02	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C38	.0047	600		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	②
C39	.01	400	210V051A03	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C40	.01	400	210V051A03	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C41	.01	400	210V051A03	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C42	100	1000	213V181H01		MD-101	L10T1		5GA-T1	
C43	.047	600	210V024A73	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C44	.047	400	210V014A73	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	③

②Some versions use .01mfd 600V in this application (Part #210V021A03)

③Some versions use .033mfd 600V in this application (Part #210V213A33)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Westinghouse PART No.	NOTES
R42	10meg		250V231A06	
R43	68K		250V226A83	
R44	6800Ω		250V226A82	
R45	470K		250V224A74	
R46	1meg		250V231A05	
R47	68K		250V226A83	
R48	2200Ω		250V222A22	
R49	68K		250V226A83	
R50	470K		250V234A74	
R51	27Ω		250V222A70	
R52	470K		250V234A74	
R53	27Ω		250V222A70	
R54	47Ω	2	250V424A70	
R55	2500Ω	10 WW	251V011H11	
R56	560Ω	4 WW	251V020H07	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @1.22A	510VCT @.165A	5V @2.9A	410V009H01					26R36①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @4A									

① Use original shields

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4400Ω CT	14Ω Tap@ 6Ω	430V050H01				A-3830	22S74	S-57Z	

AMP PARTS LIST AND DESCRIPTIONS(cont)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	15"	PM	12-14Ω	570V034H01	15A10LZ14	Parallel and Phase SP2, SP3 and SP4
SP2	7"	PM	12-14Ω	570V033H01	7A21Z12	
SP3	4"	PM	12-14Ω	570V035H01	4A1Z14.5	
SP4	4"	PM	12-14Ω	570V035H01	4A1Z14.5	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M11	Lamp	756V501H02	#1847

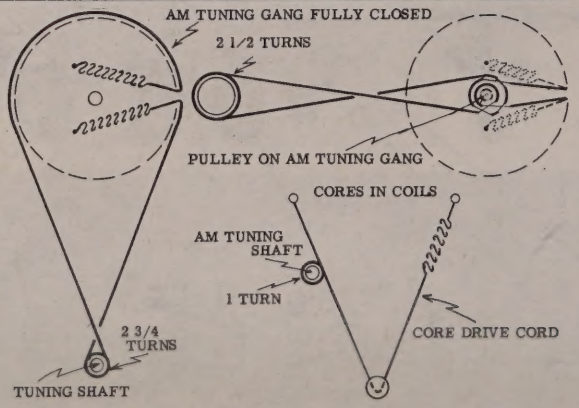
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	558V130H01	Tuning Eye
Bezel	558V141H01	Dial
Knob	550V035H07	AM FM Selector
Knob	550V071H05	Tuning
Knob	550V035H06	Equalizer, Loudness, On-Off, Bass, Treble, Input Selector
Cabinet Leg	518V001H04	Models HR107DP, HR120DP
Cabinet Leg	518V001H05	Models HR108DP, HR121DP
Cabinet Leg	518V001H06	Models HR109DP, HR122DP
Cabinet	516V050H01	Model HR107DP
Cabinet	516V058H01	Model HR120DP
Cabinet	516V050H02	Model HR108DP
Cabinet	516V058H02	Model HR121DP
Cabinet	516V050H03	Model HR109DP
Cabinet	516V058H03	Model HR122DP
Pointer	558V142H01	
Dial	558V122H01	With Station Frequencies
Dial Crystal	558V132H01	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



DIAL CORD STRINGING

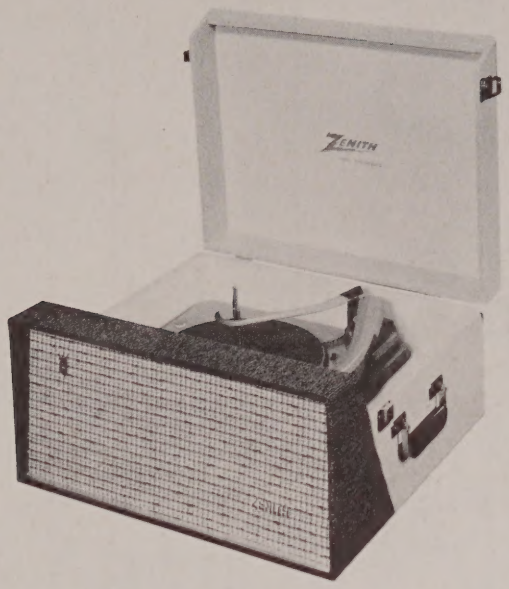
PHOTOFACT* Folder

*TRADE MARK

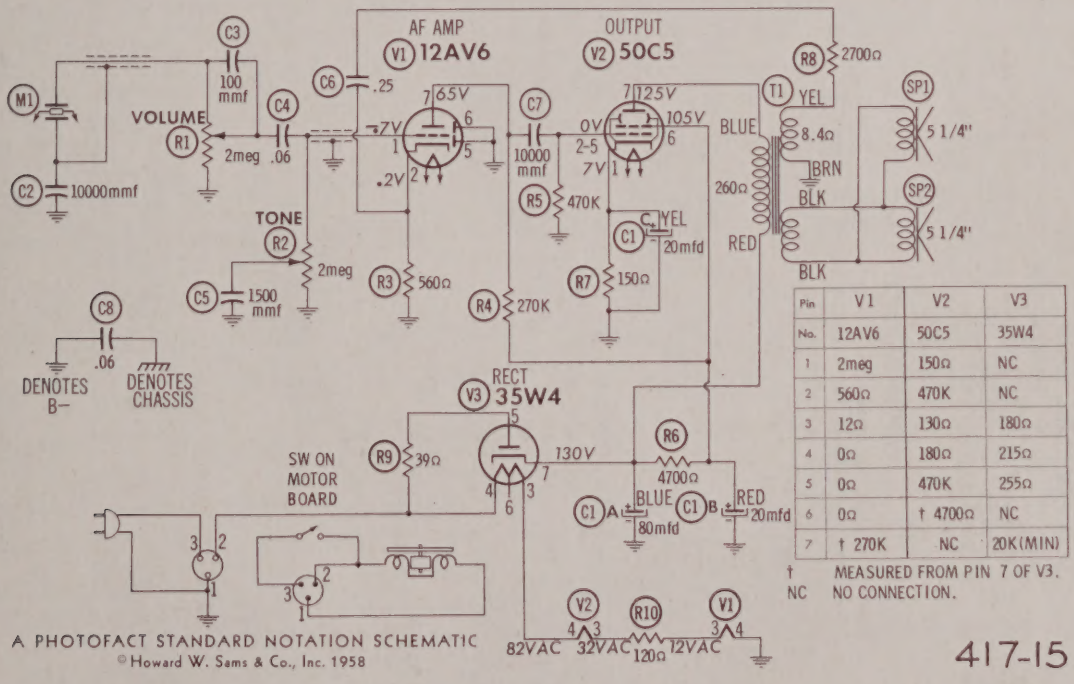
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ZENITH
MODEL AP9B

ZENITH
MODEL AP9B



TRADE NAME	Zenith Model AP9B
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AV6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .28 Amp. @ 117 Volts AC (25 Watts Less Motor)
	RECORD CHANGER - ZENITH S-14081



Pin No.	V1 12AV6	V2 50C5	V3 35W4
1	2meg	150Ω	NC
2	560Ω	470K	NC
3	12Ω	130Ω	180Ω
4	0Ω	180Ω	215Ω
5	0Ω	470K	255Ω
6	0Ω	† 4700Ω	NC
7	† 270K	NC	20K(MIN)

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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417-15

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H566

SET 417 FOLDER 15

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	

ITEM No.	USE	TYPE	NOTES
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	WC-12145	PRS150/25 V8040/20	BBRT8415C	WQ230	CDB-Q-44 22	FMT-333	
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		22-1843	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	100		22-2234	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C4	.06	200	22-1744	P288N-06		CUB6S6	GEM-416	6TM-S6	
C5	1500		22-2629	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C6	.25	200	22-2429	P288N-25		CUB2P25	GEM-2025	2TM-P25	
C7	10000		22-1843	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	.06	200	22-1744	P288N-06		CUB6S6	GEM-416	6TM-S6	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2meg	$\frac{1}{2}$	WC-12400					Volume
R2	2meg	$\frac{1}{2}$	WC-12400					Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R3	560Ω			
R4	270K			
R5	470K			
R6	4700Ω			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R7	150Ω			
R8	2700Ω			
R9	39Ω			
R10	120Ω			

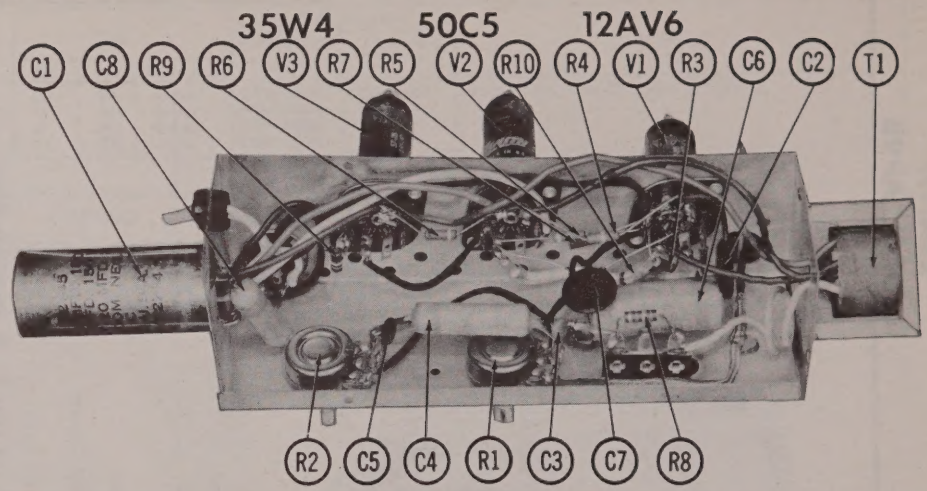
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	WC-12523							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	5 1/4"	PM	6-8Ω	WC-12694	52AZ6	
SP2	5 1/4"	PM	6-8Ω	WC12694	52AZ6	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ZENITH PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		81-TB				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ZENITH PART No.	JENSEN PART No.	WALCO PART No.	
M2				

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knobs	WC-12126-7E	
Cabinet	WC-12747	(With Hardware)
Handle Ass'y.	WC-11845-7B	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)